

Strike Settlement Lays Pattern for Harmonious Labor Relations

President's statement of principles in the main upholds industry's interpretation of Section 7(a)

IN negotiating a settlement and thus lifting the thread of widespread strikes in the industry which is leading the recovery parade, the President went far to clarify many bitterly contested issues arising out of Section 7(a).

Industry, and labor, too, now has some much needed signposts to guide it in the handling of labor problems. In fact, so broad and vital are the principles established in the settlement that they are widely regarded as laying a well-defined pattern for the adjustment of controversies in all industries. Carried out on both sides in the spirit which marked the White House statement, it is hoped that they will go a long way toward maintaining industrial peace.

Of course, innumerable questions regarding the meaning of the settlement will arise and are expected to arise. The fact that the language in spots is not as clear as might be desired, obviously will serve to increase the number of these questions. Many of these points probably will remain in dispute until the mediation board settles them in the light of practical experience, or refers them to Washington for determination.

Although the question of "Who won?" is not important now, careful analysis of the principles enunciated by Mr. Roosevelt indicate that they are for the most part in accord with

what industry has contended to be a proper interpretation of the law. Moreover, industry was considerably gratified by the President's statement that "This is not a one-sided statute. . . . It is not too much to expect organizations of employees to observe the same ethical and moral responsibilities (as industry) even though they are not specifically prescribed by the statute."

Taking up the settlement principles in order, the first asserts the right of the workers to bargain through freely chosen representatives and bars discrimination on account of union affiliations. So far as the manufacturers are concerned these do not constitute issues, as they have maintained from the first that they were ready to deal with properly elected and accredited representatives, and that they had not knowingly discriminated against union members.

The second principle is in effect a flat denial of some of the major contentions of the American Federation of Labor. It reads: "If there be more than one group, each bargaining committee shall have total membership pro rata to the number of men each member represents."

This sentence does more than upset the Federation's demand that representatives selected by the majority should bargain for all employees. In



President Roosevelt

"The Government favors no particular form . . . of employee organization"

addition to recognizing the right of minorities and individuals to bargain through representatives of their own choosing, this principle implies further that a bargaining committee will be created in each plant on which each group, regardless of the form of organization it selects, will have representation in proportion to its membership.

That this is a proper interpretation is supported by the President's

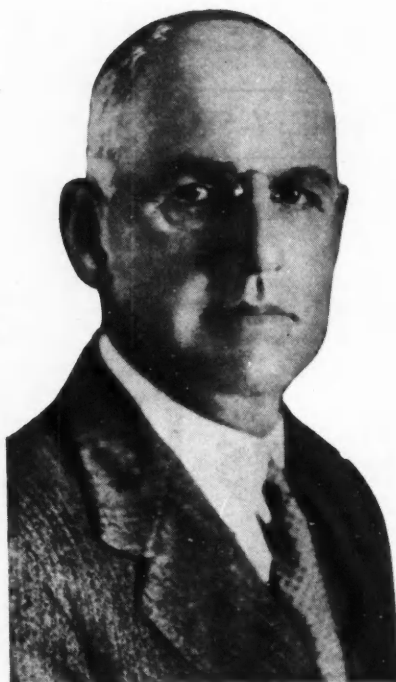
subsequent statement, that "it is my hope that this system may develop into a kind of works council in industry in which all groups of employees, whatever may be their choice of organization or form of representation, may participate in joint conference with their employers, and I am assured by the industry that such is also their goal and wish." If the President's hopes are realized, this principle sounds "taps" for the Federation's ambition to be the nation's one labor organization.

At the outset, of course, there may be some attempts by the different groups to bargain individually. In fact, labor leaders have already served notice that they will insist on this procedure. However, it is felt that ultimately the initial differences in the views of the various groups will simmer down to a number of common points which can be handled for all employees by a committee formed in the manner envisioned in the settlement. A factor in this situation incidentally is the differences within the A. F. of L. on the question of vertical vs. craft unions.

Superficially, at least, the Federation's demand for an impartial board to pass on charges of discrimination against union employees is granted by Principle 3. However, the provision that "there shall be no basis for a claim of discrimination" before the board "where no lists of employees claiming to be represented have been disclosed to the employer," takes the sting out of this concession. It makes the refusal of Federation or other unions to submit membership lists to the manufacturers a *prima facie* defense against charges of discrimination. The significance of this point becomes apparent when it is recalled that the Federation unions have consistently refused to submit membership lists to car makers.

This principle does provide, however, that the board shall have access to all payrolls and to all lists of claimed employee representation. But it is forbidden to disclose union membership rolls to the employer except on the specific direction of the President. This is interpreted to mean that proof of discrimination against a single union employee is not adequate — entire membership lists would have had to be submitted.

The board swung into action quickly, holding its first meeting in Detroit on Wednesday of this week. It consists of Richard Byrd, representing labor, Nicholas Kelley, Chrysler counsel, appointed by the manufacturers, and Dr. Leo Wolman, chairman of the NRA labor advisory board, as the neutral government



Alvan Macauley

"We are grateful . . . should have great weight in establishing industrial peace in this country"

representative. Although Doctor Wolman's background on labor experience has raised some question as to his neutrality, it is felt in some quarters that his mind is sufficiently judicial to enable him to function without bias.

There seems to be little doubt that the board's rulings on questions of representation, discharge and discrimination, which are final and binding on both parties, will be effective. Car companies indicate their willingness to abide by its decisions. But it is regarded as more than probable that only a handful of discrimination cases will ever be brought before it.

That it is the workers', and not the government's, job to determine the form of organization which shall represent them, is made abundantly clear by the fourth principle. This principle frankly states that the government "favors no particular union or particular form of employee organization or representation. The government's only duty is to secure absolute and uninfluenced freedom of choice without coercion, restraint or intimidation from any source." The last three words are important, because they serve notice on union leadership that the government will not sanction coercive methods in labor organization recruiting. This is a point on which the manufacturers have insisted, as they have consis-

tently asserted that they would combat any attempt to coerce their employees into any organization.

Another angle to this principle is that it will be no longer possible for Federation professional organizers to induce employees to join that organization by stating that President Roosevelt is indorsing the A. F. of L. as against other systems of representation, as claimed by car makers.

It is hardly necessary to point out in addition that this principle puts the stamp of government approval on works councils or company unions, where they are selected by the employees without "front office" interference.

Commenting on the fifth principle, the President says: ". . . we have for the first time written into an industrial settlement a definite rule for the equitable handling of reductions and increases of forces." It provides that "in reductions or increases of force, such human relationships as married men with families shall come first and then seniority, individual skill and efficient service. After these factors have been considered no greater proportion of outside union employees similarly situated shall be laid off than of other employees."

This rule for hiring and firing is held in some quarters to negate the union demand that seniority should precede individual merit and personal efficiency, despite the fact that seniority is mentioned first. In other words, the order in which these three factors are named is not considered to be of any significance. Furthermore, the interpretation which car factories undoubtedly will be inclined to make is that only after consideration of these four factors: married men with families, first, then seniority, skill and efficiency, does the question arise of proportionate layoff of union and non-union employees.

Thus, it would seem, if the factory interpretation is correct, that the President has amply sustained the industry's merit clause. If, after consideration of the human factors involved, outside union employees should show a lower degree of individual merit, no case of discrimination can be brought and sustained against the employer if a greater proportion of union employees should happen to be laid off.

Despite the obvious loss of prestige which the settlement represented for the A. F. of L., labor, as distinguished from labor leadership, did make a substantial gain. Caught in the fight between the manufactur-

(Turn to page 404, please)

New Traffic Type Macks Have Cabs Over Engines

Carry five per cent more load, are three feet shorter and have five foot shorter turning radius than corresponding conventional jobs

IN accordance with the trend of the times in truck design, Mack Trucks, Inc., of New York has brought out two new trucks of the type in which the cab is located over the engine. These new "Traffic Type" trucks correspond to two models of conventional design in the Mack line. Both models are 3 ft. shorter than their conventional counterparts and have a turning radius 5 ft. less, hence are considerably more maneuverable. One of the objects of the "cab-over-engine" design is to increase the permissible payload, which is limited by legal restrictions on axle loads, and it is worthy of mention that the Model CH, which has a 3-5-ton rating, can carry 1100 lb. more pay load than its conventional counterpart, while the Model CJ, with a 3½-6 ton rating, will carry 1200 lb. more. Gross-weight ratings are increased only 5 per cent, because the trucks of conventional design already carry 30 per cent of the gross weight on the front wheels and the weight distribution is not materially altered by the change to the cab-over-engine design.

The mechanical units are similar to those on other Mack trucks of current production, and most interest attaches to the arrangement of the powerplant and cab, and to the provisions for servicing the powerplant. Both trucks carry six-cylinder engines, that on the CH model having 4 by 5½-in. cylinders and developing 97 hp. at the governed speed of 2300 r.p.m., while the CJ model carries an engine with 4¼ by 5½-in. cylinders, which develops 107 hp. at the same speed.

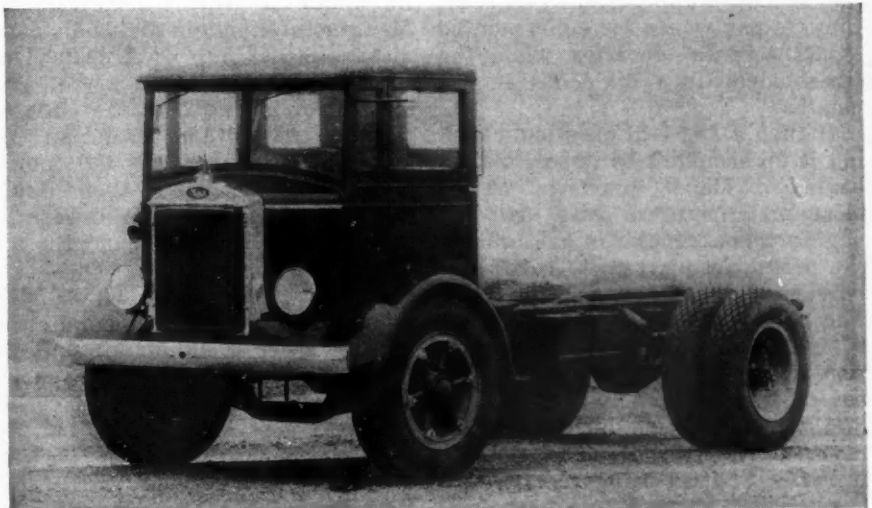
Cabs retain the same driver-comfort features that have characterized

those of other Mack trucks of recent years. Seat and back cushions have deep springs with curled hair padding, and are leather-covered. Back cushions are of the high-back inclined type. The windshield is divided in the center, and each half can be opened and closed independently. It has one-quarter-inch plate glasses which are set in rubber in a steel frame which is hinged at the top and inclined to prevent glare. To each side of the windshield there is a small "quarter" window, which serves the purpose of improving the field of vision of the driver.

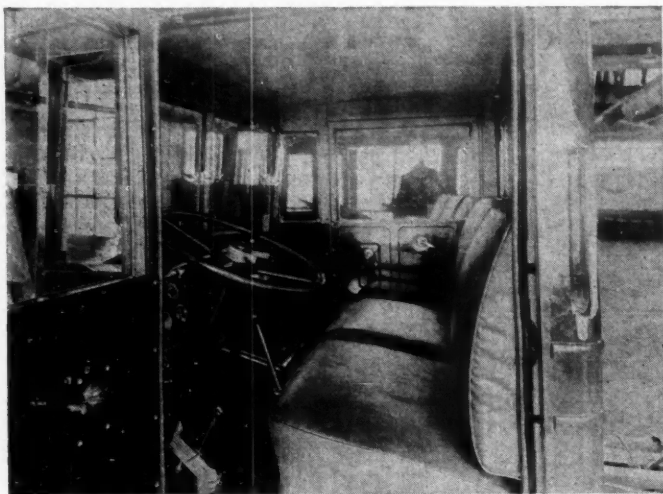
Thorough provision has been made for cab ventilation. In addition to the ventilating feature of the windshield and drop windows in the doors, there are four door-type ventilators in the cowl, two on each side.

These are operated by toggle latches and serve to draw the warm air from near the floor. The cab is entered by means of steps at the rear of the front fender, the door being hinged in front. Items of cab equipment include a dome light, two coat hooks, a metal pocket for papers, and an electric fan.

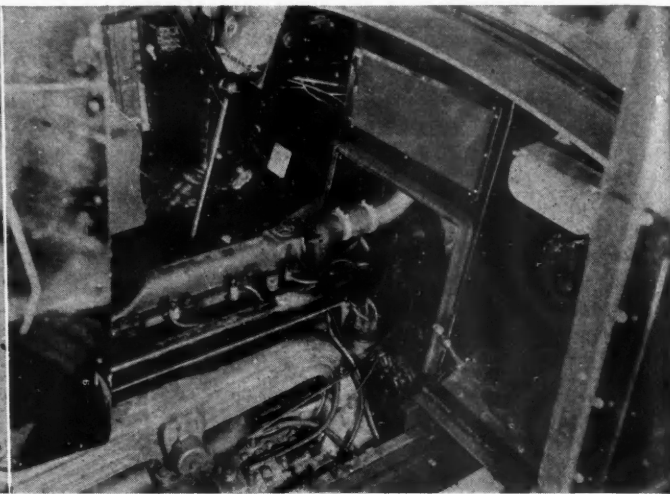
The engine, of course, projects above the floorboards and is covered by a sheet metal housing which is heavily lagged with heat-insulating material on the inside. To render the housing gas-tight and non-sonorous, it is seated in a felt-lined channel. The engine housing is really in two parts, the larger, rearmost part being hinged on top at the rear, while the smaller part is fitted into the cowl. Toggle-type hood latches serve to hold the engine housing



Three-quarter view of Mack CJ Traffic Type model, showing compactness of cab and the clear vision afforded driver through utilization of wide two-piece windshield



The interior of the cab viewed here from the left hand side reveals the extra-wide seats and accessibility of controls



This view illustrates ready accessibility of engine by simply removing right floor board and raising the engine enclosure

securely in place. To get access to spark plugs, distributor, generator, oil filler and valve tappets, the rear section of the housing must be swung up around its hinges, which can be done after the seat and back cushion of the middle seat have been removed. By removing the cushions of the side seats, swinging the seat boards upward, and removing the floorboards, access may be had to other parts of the engine. A small

trap door in the left floorboard, provided with a ring latch, affords ready access to the oil filler and oil gage. The whole powerplant may be withdrawn from the front of the chassis after removing the radiator.

A separate accessory unit is located on the forward part of the chassis, under the cowl extending from the cab to the radiator shell. It is driven through a short shaft extending from the forward end of

the crankshaft to the starting-crank pilot, which carries two pulleys, for the fan and generator belts.

At the rear end of the engine space, in the back wall of the cab, there is a grille through which some of the air entering the engine space through the radiator is discharged.

These trucks are equipped optionally with four-speed or five-speed transmissions, the five-speed unit having an over drive.

Father Coughlin States "the Real Question"

"THE real question behind the smoke screen," press reports quote Father Coughlin as saying in his Sunday broadcast, "is whether the automobile industry shall continue to pay wages for eight months of its seasonal duration while the stockholders draw dividends for 12 months."

If that is the real question, clearing it up shouldn't be impossible. In paying dividends quarterly, as do most manufacturers who are still paying them, enough is held out in the profitable quarters to cover disbursements in the unprofitable ones. The same practice might be followed in disbursing wages. When production is active, enough might be held out of the worker's pay to provide him with an income during the dull months. As a matter of fact, this is really what is being proposed in the various unemployment reserve plans now being considered.

Of course, the workers might not like this arrangement as some of them would be certain to kick that

the manufacturers were holding out and having the use of money that was rightfully theirs. In that event, the criticism made by Father Coughlin might be met in another way. Manufacturers might divide dividend disbursements into three instead of four installments and make payments, for example, at the ends of the first, second and third quarters, but none at the end of the fourth quarter. Stockholders then would only get a return during nine months as contrasted with eight months for the workers.

All of which sounds like a silly attempt to evade a basic question which Father Coughlin himself obscured by dragging in the comparison between dividends and payrolls. The real question is what can be done to iron out the seasonal fluctuations in automotive production. Manufacturers are as interested in the answer to that question as any one. Under present conditions, they must have plants large enough to meet the seasonal peaks and, during

the dull months, these plants must be operated at a fraction of capacity or closed down entirely. This excess of plant capacity over average requirements costs money, which might be saved if uniform production could be maintained throughout the entire year.

But uniform production means either of two things—building for stock at certain periods of the year, or a change in public buying habits that would distribute the year's business evenly. The first alternative involves forecasting what the public will want and when it will want it. While perhaps this can be done, the industry would be eternally grateful to anyone who will show it how to do it more accurately. As to the second alternative, it means changing the buying customs of the nation's automobile buyers, obviously a tremendous task. Maybe they can be changed, but experience has taught business that it sells most when it sells what the public wants when it wants to buy it.

JUST AMONG OURSELVES

Strike Settlement Gives Needed Rules

PRESIDENT ROOSEVELT'S settlement of the automobile strike, while it scarcely warrants fully the hope for everlasting peace expressed by the President himself, should be greeted with sincere enthusiasm on several counts.

First; it averts the immediate strike which would have played so much havoc with immediate wages, profits and production.

Second; it marks the beginning of some practical definition of the rules by which the game of Section 7A of NRA is to be played. A board of three is set up; its decisions are to be final; each bargain committee shall have total membership pro-rata to the number of men each member represents; the board is to have access to all payrolls and all lists of claimed employee representation; and "in cases where no lists of employees claiming to be represented have been disclosed to the employer there shall be no basis for the claim of discrimination."

Third; it was arrived at without compromising in any serious way the sound, fair principles which the manufacturers had enunciated and on which they stood throughout the negotiations.

Fourth; together with the Presidential statement accompanying it, the settlement brings the first encouraging and con-

fidence - inspiring evidence in many months that the New Deal Administration will look to labor as well as to management for the bearing of responsibilities as well as the claiming of "rights."

* * *

Labor Gets Responsibility As Well As Rights

IN this fourth element lies the greatest hope for permanent industrial peace and continued movement toward general prosperity. Important though the strike settlement is in itself, it can scarcely rank, so far as the industrial world is concerned, with the clear implications of the President's accompanying message that he is ready to speak and act fairly in social and industrial disputes even when acting fairly might mean taking issue with labor in general or the A. F. of L. in particular. Assuming it to define the basis of future New Deal thinking, we believe the following paragraph is by far the most important in the President's strike-settlement message:

"Industry's obligations are clearly set forth and its responsibilities are established. It is not too much to expect organizations of employees to observe the same ethical and moral responsibilities even though they are not specifically prescribed by statute. Only in this way can the industry and its workers go forward with a united front in their

assault on depression and gain for both the desired benefits of better times."

* * *

Checking Advertising's Effectiveness

THE "best" advertisement is seen eight to ten times as often as the "worst," assuming equal space and the same media, we heard Daniel C. Starch remark the other night. Starch, you know, is one of the ex-college professors who has found a way to check the effectiveness of advertisements with sufficient accuracy to mean something to a lot of big spenders—including several in the automotive field.

We gather that his studies lead to the conviction that, relatively, the advertisement and the copy itself is the factor of chief importance. When it comes to having an advertisement read in part or completely, he has found differences as high as 40 to 1 show up between the best and the worst.

The leading organizations engaged in development of methods of checking consumer reaction to advertising seem to us to have strengthened in the last few years, not only in their technique, but also the credence likely to be placed on their results because of the conservatism of their claims. Loopholes in technique are readily admitted by a majority of the most prominent groups. This very admission has increased interest in the results on the part of several executives with whom we have talked lately. There can be little doubt that the final technique has not yet been developed. In the meantime advertisers are getting more and more interested in finding ways to check the effectiveness of their expenditures.—N. G. S.

Eastman Report Would Put 150M

"HOW Railroads Can Compete with Trucks" would have been a good title for the report which the Federal Coordinator of Transportation has just issued on merchandise (less-than-carload) traffic.

The report shows that trucks have the railroads licked in the handling of this class of traffic on every major count including cost, and that they are today the dominant instrumentality for transporting merchandise freight.

Although the report gives little or no evidence of shipper dissatisfaction with existing conditions, the authors of the report propose a "remedy" which, if successful, would revolutionize the handling of this class of traffic. The remedy proposed would integrate the L.C.L. facilities of all railroads, including express and freight forwarder services, into two great, nationally competing organizations, resembling the Railway Express Agency.

The effect of this remedy, the report estimates, would be to "return" 10,000,000 tons of long-haul traffic to the rails and divert an equivalent amount of short-haul traffic now

moving over the rails to the motor truck. The real measure of transportation is, of course, the ton-mile, and unfortunately the report does not indicate what the effect of the remedy would be on this basis. But inasmuch as trucks would get short for long-haul traffic, it is reasonable to believe that the proposed remedy would reduce highway ton-miles.

In view of the general preference among shippers for truck transportation as evidenced by the report, further doubts are raised as to the wisdom of the Coordinator's previous recommendation that motor carriers be subjected to comprehensive regulation by the Interstate Commerce Commission. Such regulation undoubtedly would limit and restrict the service now being rendered by trucks in a way that at best would only be partially offset by the integrated agencies proposed in the report under consideration here, assuming that these agencies work out as well in practice as on paper.

Although the successful establishment of the plan proposed by the report unquestionably would have far-reaching effects on the market for

trucks and allied products, operators of trucks, of course, would be affected most immediately and directly. While they appreciate the nice things the report says about truck transportation, they believe that the proposals point to railroad control of all land transportation services, as the following statement by the American Trucking Association indicates:

"While the report points out definitely the advantages of truck transportation over rail service, it points the way to the eventual absorption and domination of trucking facilities by the railroads. In fact, the railroads are chided for their lack of foresight, their failure to keep pace with the needs of modern industry—the gap occupied by motor transportation—and they are urged to revise their L.C.L. methods so that they may regain the traffic that has been diverted to trucks. The purport of Mr. Eastman's exhortation clearly is that transportation is a railroad function; that, whether services are performed by rail or highway, they should be coordinated under the control of the railroads.

"And yet Mr. Eastman would turn over to rail management the control of the facility that has provided transportation flexibility and place it in a straightjacket of rules, regulations and practices from which the shipping public has definitely revolted. The plan logically and unmistakably leads to the gradual elimination of independent trucking lines. It means railroad control of all land transportation services."

Summarizing the details of the report, it shows that in 1932 two-thirds of the nation's 60,000,000 tons of merchandise traffic moved by truck; only one-third by rail, including L.C.L., express and freight forwarders. The dominant reasons for the ascendancy of the truck, as cited by shippers, are first superior speed with reduced cost and store-door delivery tied for second. Other important factors causing shipper preference are more flexible and convenient service, store-door pick-up and delivery, etc.

The motor vehicle is generally



50 Mile Limit on Truck Service

Proposes plan to enable railroads to win ten million tons of long-haul, LCL traffic from trucks in exchange for equal short-haul tonnage

superior in speed to the freight train, the report states. On through runs trucks consistently maintain an average over-all schedule in excess of 20 m.p.h., while present L.C.L. schedules rarely exceed 20 m.p.h. between depots, and door-to-door services are still slower owing to terminal detention. The motor vehicle is generally superior in speed to rail express service for distances under 150 miles, but generally inferior for distances in excess of 350 miles, although the report cites instances where trucks equal express service for distances as great as 1200 miles. The definite speed superiority of the truck over rail L.C.L., the report concludes, is responsible for a considerable part of the merchandise traffic now moving over the roads.

As to convenience, the railroad is generally at a disadvantage because of larger units and relatively fewer train schedules upon which to move the traffic, and also because of relatively shorter and less flexible business hours. Universal collection and delivery service, the report says, can be made economical to shippers and rail carriers if it is operated as an integral part of the transportation service, without restrictions, allowances, or mileage limitations.

Merchandise transported by rail L.C.L. is subjected to a greater risk of damage than if moved by truck, but the report finds that rail L.C.L. is superior in respect to responsibility for carrier undertakings and in the dependability of its schedules. The report admits, however, that the lack of schedule dependability among truck carriers is due in part to the

fact that they are frequently adjusted from day to day to meet the needs of particular patrons.

Rail L.C.L. tariffs are vigorously criticized in the report, which points to their complexity, rigorous packing requirements and lack of rate parity and flexibility.

Motor carriers in 1932 operated at the inadequate profit of two per cent on the investment. Meager as this profit was, it contrasted sharply with the rail record of \$16.60 income per ton of L.C.L. traffic originated against an average cost of handling including all operating expenses and taxes of at least \$20.73. In 1932, the report states that rail and express merchandise traffic was furnished at a loss of \$80,000,000.

As rail L.C.L. service was conducted in 1932, highway service was more economical for all hauls, the reports states on the basis of data collected. The same is true of high-

way operations of private shippers for distances under 650 miles. Assuming that the practices causing preventable wastes in the handling of railroad merchandise transportation are eliminated, the authors of the report believe, then highway transportation for distances over 150 miles would not be economically justified with motor vehicles operated at the average cost of their 1932 operations, and likewise concentration or distribution of merchandise in rail L.C.L. service for distances under 75 miles, and even after the potential economies have been realized, generally will not be economically justified. Highway transportation for distances between 100 and 150 miles generally would be justified under the conditions assumed only when superiority in speed or the flexibility of the vehicle was worth the additional cost of providing the service.

To effect the economies which would bring about the shift in L.C.L. traffic in accordance with the foregoing, the report makes the following recommendations:

1. Consolidate rail L.C.L. express and forwarder traffics and pool all rail merchandise services into two competing agencies, each operating throughout the United States, of comparable traffic and financial
(Turn to page 404, please)

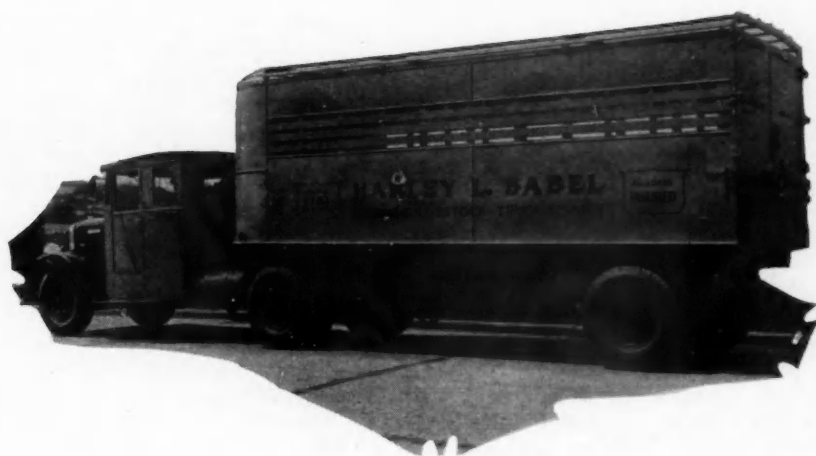
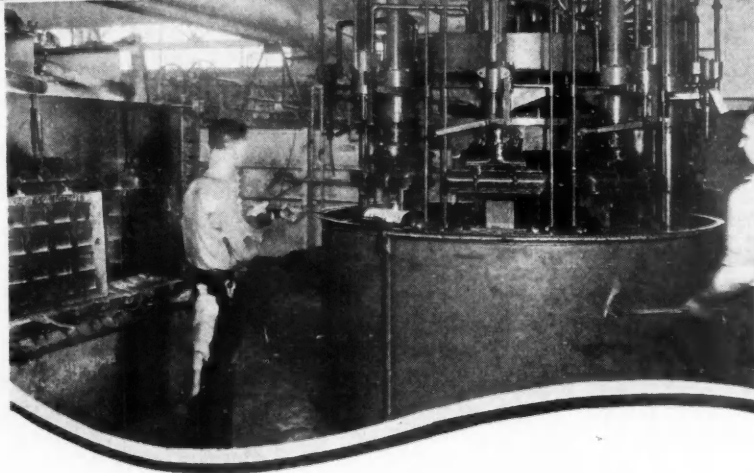




Fig. 1 (Above)—Coiling the spring after heating. Feed screw is in front, mandrel in the back. As spring reaches the end of the formation, operator controls alignment of the pointed end by means of the forked bar

Fig. 2 (Right)—Hydraulically operated automatic oil quenching machine with heavy fixtures which prevent distortion of the spring during the operation



How Chrysler

THROUGH the cooperation of the Dodge organization, we have had a first peek at the building of the big coil springs for the "floating-cushion" wheel suspension.

It takes an entire building of the Dodge group to house the equipment required for a job which is being undertaken for the first time in the automotive industry and certainly for the first time in any industry on a large scale. As you go through the line, according to the routing in Table 1, you will observe the new technique and some of the novel equipment that had to be developed for the purpose.

Speculation has been rife concerning the difficulties involved in producing the big springs in quantities, particularly because of the close tolerances on wire size and finished dimensions required to secure uniformity and to standardize the ride characteristics of the cars.

Nevertheless, Dodge springs are going through the department with smoothness and precision quite in defiance of the troubles that had been

predicted. Naturally, refinements are constantly being made here and there to improve accuracy, much in keeping with normal course of events in automotive production shops where no process is ever permitted to become static.

A visitor to the forge shop may be amazed to see bar stock about 11/16 in. diameter and 145 in. long going through the early steps in this department but that is what it takes to make one of the coil springs.

In detail, the spring has 8½ active coils and 10½ total coils, wound on a mandrel to produce an inside diameter of 3¾ in. The finished wire is held to diameter plus or minus 0.001. Springs are tested for deflection under a standard load.

It takes a total of 21 operations to complete the spring starting with the bar as delivered from the mill, cut accurately to length.

Bars are straightened, sheared to length, centerless ground to size in two operations, and the surface finally burnished to mirror smoothness.

The burnished bars then proceed

to a set-up where one end is first heated in a special furnace, then upset and squeezed to form in a special pointing machine. The other end is treated in similar fashion on a duplicate setup. The pointed bars now are loaded into a long bar-heating furnace which brings them up to the temperature required for coiling.

Fig 1 is a view at the business end of the coiling machine designed for the big spring. The cylindrical mandrel on which this spring is wound is back of the feed screw seen in the foreground. The heated bar is inserted into clamping jaws at the left, the feed screw started, and coiled springs turned out at the rate of about 120 pieces per hour on each machine. The operation is so fast that the spring is still at red heat when taken off the mandrel.

Note in Fig. 1 that the feed screw has practically completed its stroke, the operator being in the act of guiding the pointed end so that it will lay properly. The springs go into the oil-quenching machine shown in the foreground in Fig. 2. The machine is completely automatic, the function of the operators being solely to load

er Makes Coil Springs

With riding qualities depending on uniformity of product, close control of all operations features production technique which is being steadily improved.

by Joseph Geschelin

Engineering Editor, Automotive Industries

and unload the work. As is evident from the illustration, the springs are loaded into hydraulically operated fixtures which clamp the work firmly to control its length and form so as to prevent distortion during quenching.

From the quench the springs pass to a drawing furnace where they are heated for $1\frac{1}{4}$ hours. As the springs emerge they are carried over to the next operation on a flight conveyor.

The first wire brushing operation after heat-treatment is on a 4-spindle lapping machine and looks for all the world like a cylinder honing job. The springs are set into cylindrical fixtures which confine them while the brushes reciprocate up and down on the inside surfaces, the

brush being large enough to reach through to the outside. The outside surfaces are then wire-brushed on a polishing lathe in an oscillating fixture giving the effect of threading the brush through each turn of the spring.

The cleaned springs next undergo a hardness test on a special automatic Brinell testing machine.

After an optional rough-grind on the ends of the spring, the springs are sorted according to length and proceed to the finish-grind of the

Fig. 3 (Right)—Spring testing machine with sufficient capacity to test springs to full deflection. Routine test checks deflection under load of 1255 pounds



Fig. 4 (Left)—Springs are ground to length on Gardner grinder, using a two-station indexing fixture

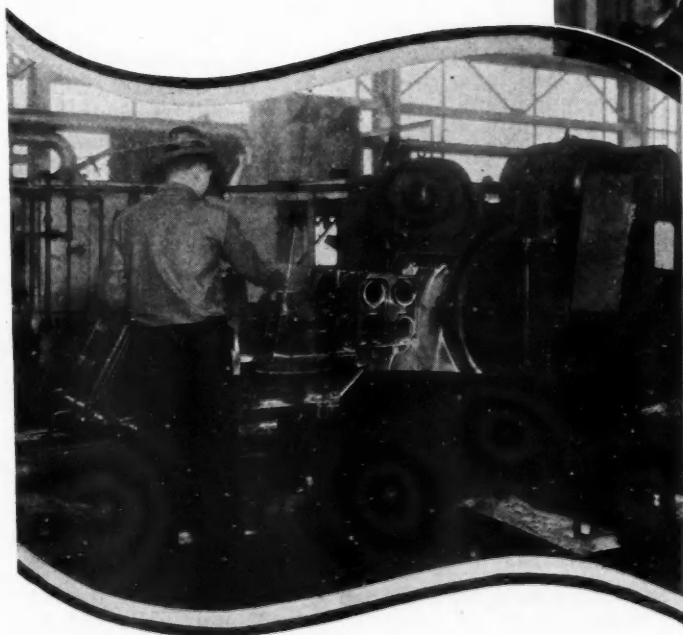


Table 1 Present Routing Chrysler Coil Springs at Dodge Forge Plant

1. Straighten bar	Bar Straightening Machine	12. Wire brush from inside	
2. Cut to length	Punch Press	13. Wire brush from outside	Polishing Lathe
3. Rough grind O.D. of bar	Centerless grinder	14. Test for hardness	
4. Finish grind O.D. of bar	Centerless grinder	15. Rough grind ends if necessary	Disc Grinder
5. Planish O.D. of bar	Surface rolling machine	16. Grind both ends square and parallel	Heavy duty double spindle grinding machine
6. Load conveyor, heat and point both ends of bar	Bar end heating furnace and roll pointing and squeezing machine	17. Grind chamfer on inside dia. on both ends	Stand grinder
7. Load furnace to heat bar for coiling	Bar heating furnace	18. Test for set, load and mark identification	8 x 18 auto coil spring scale tester and bulldozer
8. Form coil spring	Hot spring coiling machine	19. Wash	Washing machine
9. Heat for hardening		20. Correct for length	
10. Quench in oil		21. Enamel and bake	Conveyor, booth and oven
11. Draw	Draw furnace		

ends. The sharp corners on the ground ends are chamfered on both ends in a motor-driven stand grinder.

Springs are now ready for final inspection operations. The first of these is the test for set and deflection under a standard load of 1255 lb., using a special testing machine shown in Fig. 3.

After washing, the springs are

placed on an overhead chain which carries them through enamel dip troughs and thence through the Dry-Sys baking oven for drying.

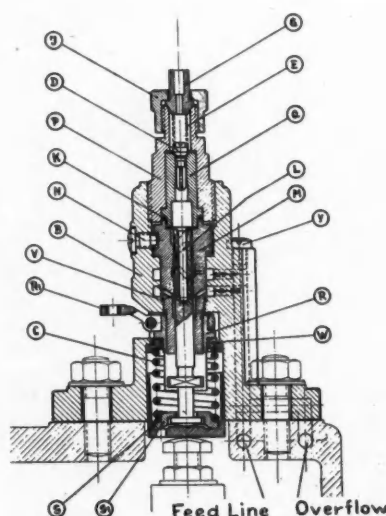
When the springs emerge from the drying oven they are inspected visually and sorted according to grade in suitable containers which carry them to the finished stores and ultimately to the assembly lines.

As intimated earlier, every step in the present routing is being studied constantly for possibilities of refinement and improvement. The present setup is but the starting point for an ultimate technique which will produce these springs under controlled procedure with greatest possible speed and lowest possible cost.

New German Single-Unit Diesel Injection Pump

THE drawing reproduced herewith is a section of a single-unit injection pump for Diesel engines, manufactured by L'Orange Brothers of Feuerbach, Germany. The pump is described as of the uniflow type. It is evidently intended to be mounted directly on the engine crankcase and to be operated from the engine camshaft. The stroke of the piston is constant and the amount of fuel injected is controlled by turning the pump plunger around its axis by means of lever R_1 . Passages are drilled in the pump body for the supply of fuel to the pump and for the return of any excess fuel not injected, these two passages communicating with corresponding passages drilled in the crankcase wall.

As will be seen from the drawing, the pump plunger is drilled out axially, and at the bottom of the axial drill hole there are radial drill



Sectional view of the L'Orange Brothers Diesel pump

holes through which fuel is admitted to the pump barrel while the plunger is near the bottom of its stroke. On the delivery stroke, as soon as the transverse holes in the plunger pass beyond an enlargement in the bore of the barrel, the inlet is closed and fuel is forced through the delivery valve and connection at the top. This continues until a helical slot on the outside of the plunger comes into registry with an enlargement at the upper end of the pump barrel, after which the fuel moved by the plunger is returned to the source of supply through the return passage. The point in the stroke at which injection ceases evidently depends on the angular position of the pump plunger which is controlled by means of lever R_1 . The method of transmitting motion from lever R_1 to the pump plunger is of interest to those in the Diesel equipment field.

Citroen Combines Laboratory, Speedway and Road Tests

to Show Up "Bugs" in New Engines

IN a paper read recently before the French Society of Automobile Engineers, C. M. Brull, chief of the Laboratories of the Citroen Company, described the procedure followed by that company in testing out a new engine before placing it definitely in production. He had previously pointed out the dangers of being guided entirely by tests on tool-room-built models, which may differ from the regular production models in important particulars and may give results that cannot be duplicated with the production models. Said Mr. Brull:

"First of all, after the experimental model has been designed, machined up and assembled, and turned over a few times with 'any old adjustment,' it is disassembled, redesigned, and placed in production with the regular manufacturing equipment, or means duplicating it as closely as possible; in any case, by the production department and outside the experimental department. For the tests we have the choice between dynamometer tests, road tests, and track tests. It goes without saying that, if waste of time and effort is to be avoided, the various corresponding divisions are and should be grouped in the same laboratory. I wish to add that a continual rotation between the dynamometer engineers and the test-track engineers is indispensable.

"On the dynamometer we may determine the power of the engine, the fuel consumption at various loads (all for a definite adjustment), and, to a certain extent, the adequacy of various parts, but the determinations are made under unusually favorable cooling conditions. One quite essential thing is lacking, namely, the loading curve.

"On the track we determine the correct adjustments (carburetor) and the loading curve with the dynamometer car, from which we can figure the proper rear-axle ratio for the best average performance. Endurance tests throw light

on the most probable "incidents" in the life of the engine in the hands of the user. They are practically never the same as those which occur during the dynamometer tests. I remember in this connection the burning of valves at Monthlery (Speedway) which the dynamometer test had not revealed, not even at the end of 100 hours at 4000 r.p.m. The track test is both too severe (on account of the continuity of the load, which is constantly close to the maximum, because it is in this region that the functions which vary least rapidly lend themselves best to measurement), and not severe enough, because of the very skillful operation by the professional drivers who instinctively avoid the errors of the ordinary driver.

"As to road tests—provided measurements such as those of temperatures and fuel consumption are included—they will reveal practical faults of use, cause certain parts of the engine to fail in consequence of the transmission of vibrations from the chassis, protect others more than the track on account of the impossibility of maintaining high speeds for long periods, and, in general, are the one form of test which most nearly duplicates the conditions of use by the owner. In making this statement I do not presume to have made a new discovery.

"How should the work be divided between these three testing instrumentalities?

"Following is the system which we have developed: The engine is passed through a short dynamometer test, for a wearing-in and a rough carburetor adjustment; is mounted in the car and submitted to a test on the track with the object of improving the adjustment. It is then returned to the dynamometer for a power test with the track adjustment, determination of the spark-advance curve, determi-

nation of the heat loss to the jacket and the exhaust gases, and an endurance run under full power extending over 50 or 100 hours. This is followed by dismantling of the engine, wear measurements, and rebuilding.

"Back to the track for refinement of the adjustments, determination of accelerations, various consumptions, power-speed curve of car, and selection of the proper rear-axle ratio. Meanwhile other engines of the same model leave for an endurance test on the track carried out at the rate of 625 miles per day with three shifts of drivers. At the end of ten or fifteen days appear the first signs of congenital weaknesses: Systematic wear, for instance, in the valve gear; burning of valves, overheating of various parts, breakages due to vibration, etc. The vehicles carrying the engines are veritable rolling laboratories, on which measurements are made continually. At the end of one month the test is completed and the alterations deemed necessary are made.

"After this—and not before—we may take the road, over routes carefully chosen in accordance with the season and the nature of the test, so as to encounter maximum differences in atmospheric temperature, in altitude, in profiles, and in grades. The road test expeditions comprise only a few cars, because otherwise they would be difficult to handle. There are necessarily several vehicles with the same equipment, and at least one "reference vehicle" of the model which is to be replaced. The more the track tests have eliminated the need for daily nursings and minor repairs (because the problem is to cause minor defects to "ripen" rapidly, even at the risk of discovering too many), the more the road expedition tests are painstaking, because,

(Turn to page 402, please)

RADIATOR CAPACITIES

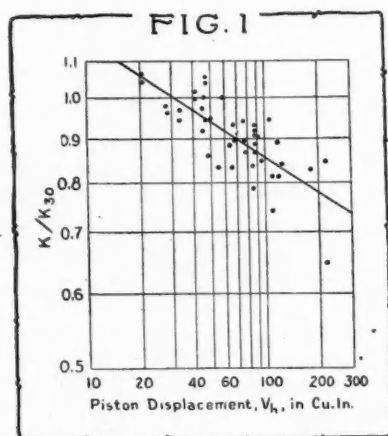


Fig. 1. Variation of heat loss to waterjacket per unit of exposed wall area, with cylinder size

IN internal - combustion - engine practice, although a predetermination of the rate of heat loss to the water jacket is of importance in connection with the design of the engine cooling system, it has been customary in the past to follow a rule of thumb and figure with a given number of heat units per minute per brake horse power under full-throttle conditions.

With the object of establishing a more exact basis for the predetermination of cooling capacity required, I collected and evaluated available factory-test results and published results of jacket-loss measurements under full-throttle conditions. For carburetor engines, moreover, I have attempted to calculate the rate Q_k of heat absorption by the cooling water, in B.t.u. per minute, by the use of the Nusselt equation, taking into account the actual conditions, including the heat due to piston friction. The values obtained from these calculations are represented by the dotted line in Fig. 2. Although many estimates had to be made, calculated values of the total heat loss to the cooling jacket agreed very well with the experimental values as regards order of magni-

tude and dependence on compression ratio and speed of rotation. The slight differences between the curves of calculated and observed values in Fig. 2 may well be due to a faulty determination of volumetric efficiencies. There was no such close conformity, however, with respect to dependence on cylinder size.

In order to be able better to compare the results of individual experiments, the heat-flow factor k was introduced.

$$k = Q_k / F \text{ B.T.U. per sq. in. per min.}$$

In determining the exposed surface F of the combustion chamber at midstroke, on which the heat-flow factor is based, the compression chamber was considered to be of the form of a cylindrical chamber of equal volume and with a diameter D equal to the cylinder bore. Then, if the stroke is S in. and the compression ratio is represented by e .

$$F = 2 \frac{D^2 \pi}{4} + \left[\frac{e}{e-1} - \frac{1}{2} \right] S D \pi \text{ sq. in.} \quad (1)$$

Ricardo and Schey have made investigations regarding the influence of the compression ratio on the jacket loss. The results of Ricardo agree well with calculated results

and may be expressed by the equation

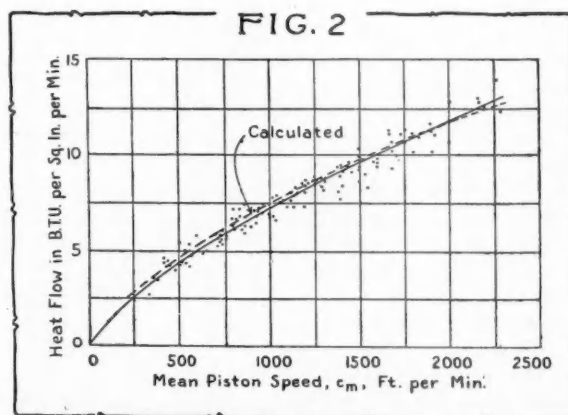
$$\frac{Q_k}{Q_{k30}} = \frac{1.488}{(e-1)^{0.266}} \quad (2)$$

Since F , the wall area exposed to the burning gases at midstroke, is independent on e to a certain extent, an increase in the compression ratio e results in a slight decrease in the heat flow. In order to illustrate the dependence of heat flow on the cylinder size, V_h , the ratio of the value k for any given cylinder size, reduced to a compression ratio $e = 5$, to the heat flow k_{r-30} for a 30-cu. in. cylinder at the same piston speed was determined. As may be seen from Fig. 1, which is based on test results from four-cycle engines, this relation may be expressed as a function of cylinder size by the equation

$$\frac{k_r}{k_{r-30}} \frac{1.587}{V_h^{0.125}} = \quad (3)$$

In order to determine the dependence of the rate of heat flow on the mean piston speed c_m from all of the experimental data for car-

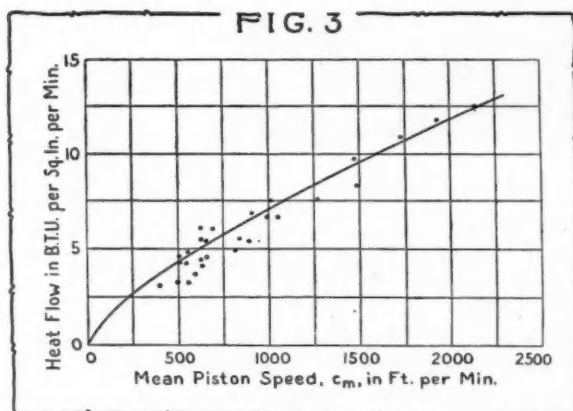
Fig. 2. Variation of rate of heat flow to waterjacket in four-cycle carburetor engine (reduced to 30.5 cu. in. cylinder size and a compression ratio of 5)



by Dr. Ing. Ernst Drucker

Predetermined Accurately Engine Size and Speed Data

Fig. 3. Variation of rate of heat flow to waterjacket in Diesel engine (reduced to 30.5 cu. in. displacement per cylinder)



buretor engines, these data were reduced, with the aid of equations (1), (2), and (3), to a cylinder of 30-cu. in. displacement and a compression ratio of 5 to 1. The results thus obtained were plotted in Fig. 2 against the piston speed in ft. per min. The full-line curve corresponds to the equation

$$k = 0.0365 c_m^{0.71} \text{ B.T.U. per sq. in. per min.} \quad (4)$$

From equations (1), (3) and (4), we obtain for the jacket heat for a cylinder with a compression ratio of $e = 5$

$$Q_{k-s} = 0.0365 c_m^{0.71} \frac{1:587}{V_h^{0.185}} \left(\frac{D^2 \pi}{2} + \frac{3}{4} S D \pi \right) \text{ B.T.U. per min.}$$

and by making use of equation (2) and making some simplifications, we obtain for an engine of z cylinders

$$Q_k = 0.0537 z D^{1.78} S^{0.878} n^{0.71} \left(1 + \frac{3 S}{2 D} \right) e^{-0.298} \text{ B.T.U. per min.} \quad (5)$$

In this equation z is the number of

cylinders; D , the cylinder bore, and S , the stroke in in., and n is the engine speed in r.p.m.

If we compare English data and reports of firms regarding the heat transferred to the cooling medium in different air-cooled engines with equation (5), we find that the devi-

ations are no greater than in Fig. 2, hence equation (5) should be sufficiently accurate also for air-cooling.

Measurements of jacket heat in Diesel engines over a considerable speed range have been published only recently, so that a comparison in accordance with Figs. 1 and 2 is not yet possible. Differences in the compression ratio e should not have any appreciable influence on Q_k . For four-cycle Diesel engines with cylinders of up to about 1200 cu. in. displacement, equation (3) agrees quite well with experimental data, but for larger cylinders k probably remains substantially constant, independent of the cylinder displacement V_h . If Diesel test results for cylinder sizes up to 1200 cu. in. are reduced with the aid of equation (3) to a cylinder of 30 cu. in. displacement, as done in Fig. 3, and the curve there drawn in, which represents a carburetor engine of equal cylinder size and having a compression ratio $e = 5$, is compared with the plots of experimental data, the scattering of points is found to be quite moderate. Therefore, for smaller direct-injection Diesel engines of the type used for motor vehicles and aircraft, the rate of heat transfer to the jacket can be expressed approximately by the following equation:

$$Q_k = 0.036 z D^{1.78} S^{0.878} n^{0.71} \left[1 + \frac{3 S}{2 D} \right] \text{ B.t.u. per min.} \quad (6)$$

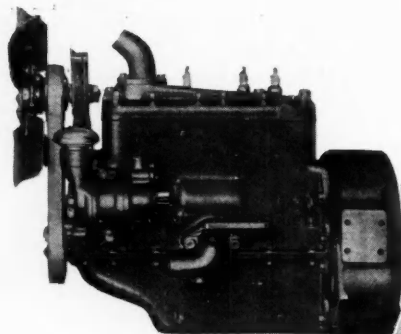
For high-speed internal combustion engines the heat absorbed by the cooling water under full load therefore can be determined directly, and with sufficient accuracy for all practical purposes, from the engine dimensions and the speed of rotation. As regards Diesel engines, it is desirable that further test data be published, for the sake of increased accuracy.

New Tatra Model To Be Rear-Engined

According to a report to the U. S. Department of Commerce from A. D. Wallenfels, Prague, the Tatra automobile factory, well known for its unique chassis construction, comprising a central tube support and independently sprung wheels, is preparing a new model for 1934. This model will have an

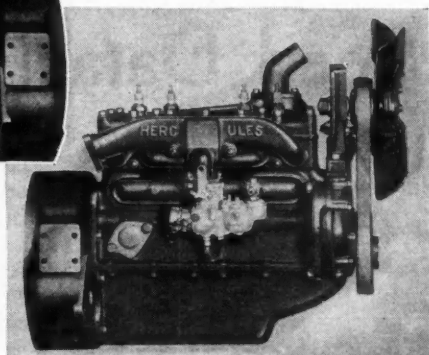
eight-cylinder, four-cycle engine of about 183 cu. in. displacement, placed behind the rear axle and will be the first of its kind in Czechoslovakia. The Tatra model with four-cylinder engine will also be produced in 1934, but the displacement will be increased from 73 to 91 cu. in.

Hercules Adds Two Small Fours



They are designed to provide power for auxiliaries on trucks, agricultural equipment, etc.

Two views of the new Hercules four-cylinder units



HERCULES MOTORS CORPORATION, Canton, Ohio, has just announced the addition of two new ZX models to its line of heavy-duty four- and six-cylinder engines, which gives it a complete range of such engines from 4 to 200 hp. The ZX engines are small powerplants for application to commercial vehicles, agricultural equipment, general industrial and road-building machinery, oil-field apparatus and marine uses. They have the following cylinder dimensions:

Model	Bore	Stroke	Displacement
ZXA	2½	3	58.8
ZXB	2¾	3	64.9

In general design the two models are identical, differences being confined to the bores and to dimensions affected thereby. Model ZXA develops a maximum torque of 37 lb.-ft. over the speed range 1500-2400 r.p.m., while Model ZXB develops 40 lb.-ft. over the same speed range. Both models peak at 4000 r.p.m., at which speed they develop 22 and 24.5 hp. respectively.

Thermo-siphon cooling is standard practice, but water pumps are available if desired. These engines and power units are regularly equipped with an S.A.E. No. 6 standard bell housing, but Nos. 4 and 5 bell housings will be supplied on request. Either a downdraft or an updraft manifold may be had.

Lubrication is by the full force-feed system, the oil pump being lo-

cated beneath the center main bearing and driven from the camshaft through helical gears. To insure long life, the shafts and gears of the oil pump are case hardened. Oil pressure can be readily adjusted to meet different requirements of operation.

The ZX engines have the crankcase cast integral with the cylinders. The crankshaft is 2 in. in diameter at the three main bearings, which

have the following lengths (front to rear): 15/16, 1⅜ and 1⅜ in. Crankpin bearings are 1½ in. in diameter and 1 in. long. The center-to-center length of the connecting rod is 5⅛ in.

Cast-iron pistons are standard, but aluminum pistons can be supplied. Each piston carries two ⅛-in. compression rings and one 3/16-in. oil ring. Piston pins are 11/16 in. in diameter and are clamped in the top end of the connecting rods. There are bronze bushings in the piston bosses. The camshaft (on the right-hand side) is supported in four 1¼-in. bearings of the following lengths: 1⅛, 19/32, 19/32 and 19/32 in.

These engines have L-head cylinders with 30-deg. valve seats. Exhaust valves have a clear diameter of ⅞ in., intake valves of 1⅛ in. They are operated through mushroom-type tappets.

The overall dimensions of these engines are as follows: Length, 23 9/16 in.; height, 16¼ in.; width, 14¾ in. These dimensions are subject to slight variations due to the use of bell housings, etc., other than standard.

Walker Introduces New "House to House" Electric

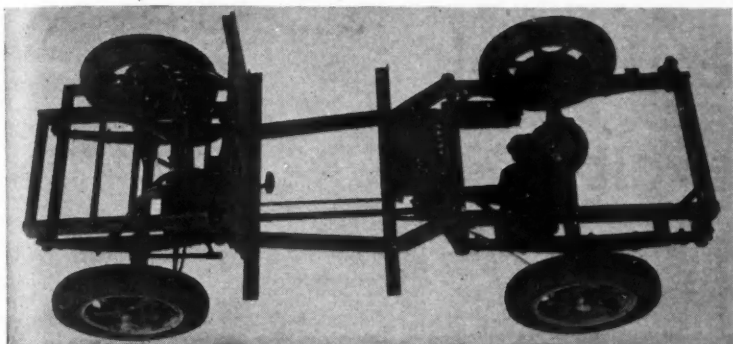
AN electric ¾-1 ton delivery vehicle of the easy-entrance or "house-to-house" type and a corresponding straight-frame vehicle for general delivery service have been brought out by the Walker Vehicle Co., Chicago, Ill., Division of the Yale & Towne Manufacturing Co. Features of the design are the location of the entire battery at the forward end and the use of a parallel-drive double-reduction axle. The loading space is accessible from both the rear and the sides of the chassis. Aside from the frame design the two chassis are virtually identical.

Controller handle, brake lever and

reversing lever are located on a forward deck close to the steering wheel, but so that they do not interfere with access to the driver's aisle or the loading space. All instruments and electric control devices are located in a countersunk panel in the dashboard.

The frame is of alloy pressed steel, with side rails of 4 by 2 by 3/16-in. section. Wheels are of the malleable-iron, six-spoke type with integral hub. 30 by 5-in. pneumatic tires are fitted all around.

The new vehicles are fitted with either a low-speed, high-acceleration drive for "house-to-house" service or



Chassis of the new $\frac{3}{4}$ -ton, easy entrance Walker electric designed for "house to house" delivery service



Side view showing the style of body fitted to the new Walker easy entrance truck

with a high-speed drive for general delivery service. Speeds of from 16 to 21 m.p.h. are said to be obtainable from standard batteries. The motor is mounted on the rear-axle housing parallel with the axle. To accommodate the motor, the differential is placed off center. There is a first reduction by herringbone gears and a second by spur gears. These gears or their shafts are mounted on ball

and roller bearings and they run in an oil bath.

Maintenance requirements are claimed to have been reduced to a minimum. There are fifteen grease fittings on the chassis and none require attention more frequently than once a month. The front axle is a Clark, the steering gear a Ross, and the drag link of Thompson Products make. The controller is the Walker

Vehicle Company's manually-operated cam type, with a continuous capacity of 250 amperes. Bendix brakes are fitted to all four wheels, front brakes measuring 12 by $1\frac{3}{4}$ -in. and rear brakes 15 by $2\frac{1}{4}$ -in. Drums are of cast iron and brake shoes have molded linings. All brakes can be applied by either hand or foot. The rear-axle reduction ratio is 4.75.

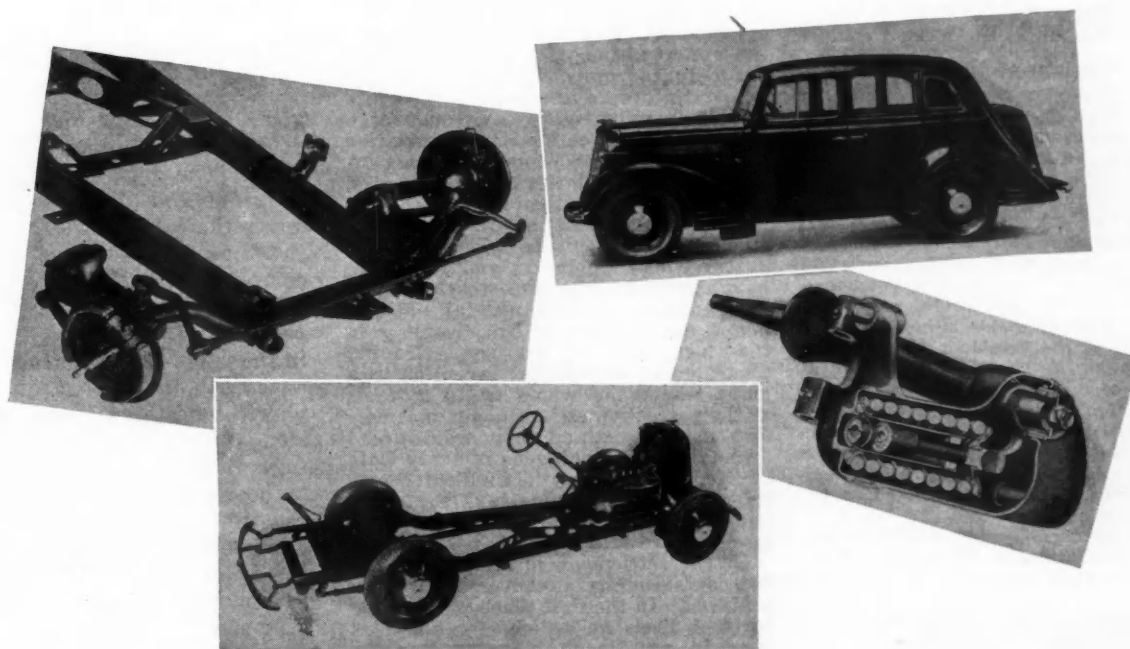
Dubonnet Knees on Opel

Knee action of the Dubonnet type features the new models introduced recently by Adam Opel Co. (a General Motors subsidiary in Germany). There are two chassis, one with an 80 cu. in., four-cylinder engine and the other a 122 cu. in. six. On the smaller model, the two-door sedan sells for 2,650 marks, while a cabriolet on the larger chassis lists at 4,000 marks. The new models are in addition to a

73 cu. in. four retailing at 1800 marks, which was introduced last fall.

Among the features of the new models revealed by the accompanying illustrations are the following: The knee actions and the front wheels are supported by a substantial tubular unit which forms the front cross member of the frame. The sectional view shows the neat design of the knee action unit. This unit is

carried back of the king pin and hence its inertia helps to force the front wheel into a turn, whereas in the Chevrolet design the forward location of the unit makes its inertia resist the effort applied to the steering wheel. The view of the chassis shows that the propeller-shaft is carried above the X-type cross-member. Body design follows American practice rather closely.



The Settlement Negotiated by President Roosevelt

AFTER many days of conferring in regard to the principles of employment in the automobile industry the following statement covers the fundamentals:

1. Reduced to plain language Section 7a of N.I.R.A. means—
 - (a) Employees have the right to organize into a group or groups.
 - (b) When such group or groups are organized they can choose representatives by free choice and such representatives must be received collectively and thereby seek to straighten out disputes and improve conditions of employment.
 - (c) Discrimination against employees because of their labor affiliations or for any other unfair or unjust reason is barred.

A settlement and statement of procedure and principles is appended hereto.

It has been offered by me to, and has been accepted by, the representatives of the employees and the employers. It lives up to the principles of collective bargaining. I hope and believe that it opens up a chance for a square deal and fair treatment. It gives promise of sound industrial relations. It provides further for a board of three of which the chairman will as a neutral represent the Government.

In actual practice details and machinery will, of course, have to be worked out on the basis of common sense and justice, but the big point is that this broad purpose can develop with a tribunal which can handle practically every problem in an equitable way.

Principles of Settlement

Settlement of the threatened automobile strike is based on the following principles:

1. The employers agree to bargain collectively with the freely chosen representatives of groups and not to discriminate in any way against any employee on the ground of his union labor affiliations.

2. If there be more than one group each bargaining committee shall have total membership pro rata to the number of men each member represents.

3. NRA to set up within 24 hours a board, responsible to the President of the United States, to sit in Detroit to pass on all questions of representation, discharge and discrimination. Decision of the board shall be final and binding on employer and employees. Such a board to have access to all payrolls and to all lists of claimed employee representation and such board will be composed of,

(a) A labor representative. (b) An industry representative. (c) A neutral.

In cases where no lists of employees claiming to be represented have been disclosed to the employer, there shall be no basis for a claim of discrimination. No such disclosure in a particular case shall be made without specific direction of the President.

4. The Government makes it clear that it favors no particular union or particular form of employee organization or representation. The Government's only duty is to secure absolute and uninfluenced freedom of choice without coercion, restraint, or intimidation from any source.

5. The industry understands that in reduction or increases of force, such human relationships as married men with families shall come first and then seniority, individual skill and efficient service. After these factors have been considered no greater proportion of outside union employees similarly situated shall be laid off than of other employees. By outside union employees is understood a laid-up member in good standing, or anyone legally obligated to pay up. An appeal shall lie in case of dispute on principles of paragraph 5 to the Board of Three.

In all the hectic experience of NRA I have not seen more earnest and patriotic devotion than has been shown by both employers and employees in the automotive industry. They sat night and day for nearly two weeks without a single faltering or impatience. The result is one of the most encouraging incidents of the recovery program. It is a complete answer to those critics who have asserted that managers and employees cannot cooperate for the public good without domination by selfish interest.

In the settlement there is a framework for a new structure of industrial relations—a new basis of understanding between employers and employees. I would like you to know that in the settlement just reached in the automobile industry we have charted a new course in social engineering in the United States. It is my hope that out of this will come a new realization of the opportunities of capital and labor not only to compose their differences at the conference table and to recognize their respective rights and responsibilities but also to establish a foundation on which they can cooperate in bettering the human relationships involved in any large industrial enterprise.

It is peculiarly fitting that this great step forward should be taken in an industry whose employers and employees have contributed so consistently and so substantially to the industrial and economic development of this country in the last quarter century. Having pioneered in mechanical invention to a point where the whole world marvels at the perfection and economy of American motor cars and their wide-spread ownership by our citizens in every walk of life, this industry has indicated now its willingness to undertake a pioneer effort in human engineering on a basis never before attempted.

In the settlement just accomplished, two outstanding advances have been achieved. In the first place we have set forth a basis on which, for the first time in any large industry, a more comprehensive, a more adequate and a more equitable system of industrial relations may be built than ever before.

It is my hope that this system may develop into a kind of works council in industry in which all groups of employees, whatever may be their choice of organization or form of representation, may participate in joint conferences with their employers and I am assured by the industry that such is also their goal and wish.

In the second place, we have for the first time written into an industrial settlement a definite rule for the equitable handling of reductions and increases of forces. It would be ideal if employment in all occupations could be more generally stabilized, but in the absence of that much desired situation, if we can establish a formula which gives weight to the human factors as well as the economic, social and organizational factors in relieving the hardship of seasonal layoff, we shall have accomplished a great deal. My view, and that of both employees and employers, is that we have measurably done so in this settlement.

This is not a one-sided statute and organizations of employees seeking to exercise their representative rights cannot at the same time be unmindful of their responsibilities.

Industry's obligations are clearly set forth and its responsibilities are established. It is not too much to expect organizations of employees to observe the same ethical and moral responsibilities even though they are not specifically prescribed by the statute. Only in this way can industry and its workers go forward with a united front in their assault on depression and gain for both the desired benefits of continually better times.

Citroen Combines Tests

(Continued from page 397)

after all, a car which is disabled does not disclose any further defects. The drivers carry out their program and the passengers note down their impressions, which we then seek—sometimes vainly—to correlate with the curves obtained during the track test. We make a record of the changes to be made in the parts of the engine in accordance with their effects, the atmospheric conditions (rain, mud, dust, etc.) and the reactions of road driving. After that the engine is ready to be released for production, and the time elapsed between the first dynamometer tests and the end of the road tests should not exceed two months, if the particular engine saw the light of day in a state of good health—which latter is not our affair but that of the engineering department."



PRODUCTION LINES

World's Lightest

Dowmetal is shown in full stature in a new engineering handbook which has just come over our desk. Within its covers you find a wide scope of applications in the forms now available. Then a complete section on shop practice, including cleaning and finishing. One of the most valuable features is a complete treatment of physical and mechanical properties; also a section on structural shapes. All in all, the handbook is a decided contribution to the immediate needs of engineers, purchasing agents, production men and metallurgists. There is a price on the book, but we are told that for a limited time we can promise copies without charge to readers of this page.

About Railcars

If and when the railcar becomes a main line transportation unit, it will be completely out of the automotive field in every respect. In fact its closest tie at present is the powerplant. But when it gets into big units, the engine will be more akin to stationary jobs and not at all comparable to the flexible power plant required for road transportation.

Shifting Scene

One of our friends, who by the way is one of the best informed people in the transportation field, tells us that the railcar picture is developing in most unexpected fashion. Starting as an automotive product against much inertia among the railroaders, it is graduating from the experimental stage and is about to be elevated to a place of greatest prominence. In fact it seems that the railcar is about to abandon its lowly role as a branch or feeder

unit and blossom out into main line trains of many cars. When that happens the railcar will bid adieu to its automotive forebears and become a unit of railroad equipment.

Wake Up

Have you realized that the manufacturing industry is paying a sizeable direct tax which seems to have no justification in fact? We refer to the tax of 4c you have been paying on each gallon of cutting fluid used in the machine shops. Now the only reason for this tax so far as we can learn is that some government officials have ruled that all petroleum products and oils of every description are to be classified as motor oils, on which the tax of 4c was originally levied. The tax is so easy to collect that it's just a natural. And for some reason or other it has escaped the attention of those who have been geared up to fight pernicious taxation. In the automotive industry alone, the tax on cutting fluids probably amounts to over \$500,000 per year on the basis of a usage of over 10,000,000 gallons of cutting fluids.

Turns Chips

This has been going on for quite some time, but it may be of interest nevertheless. It seems that a certain company in Germany has been doing some very high speed turning with cemented-carbide tools, going up to 900 fpm. on steel. To avoid injury to operators, the tool is inverted so that the chip comes through underneath. However, the thing that interests us is that the top rake surface just back of the cutting edge is notched across the width to prevent erosion, due to the curling of the chip. By trial and error the location and width of the notch have been so determined that the chip

usually strikes the forward edge of the notch, curls in the trough without touching the bottom, and turns up on the other edge. Claim is made that this device prevents erosion of the tool tip and increases the life of the cutting edge by localizing the heat from the chip in the region back of the notch. We thought you'd like to hear about this idea.

Leaps and Bounds

Usage of stainless steels of the machineable types has been growing by leaps and bounds in the automotive industry. The latest development is the use of these materials for the production of bolts and nuts; also a new castellated nut which has been adopted as standard by one of the largest car builders.

Good Stuff

The Houghton Line for February has some interesting notes on cutting fluids and tool forms for economical machining. There is a lot of meat in the few succinct paragraphs devoted to the topic and they're well worth careful reading. Be sure to spend some time on this article if you have any stake in metal cutting.

Long Life

Firth-Stirling has just issued a new folder giving complete details of their Cromovan Triple Die Steel for dies where production runs into the hundreds of thousands of pieces. This material is of an improved composition of higher alloy content, patented. Its properties are said to include: unusual machineability in the annealed condition, practically no dimensional change in hardening, intense hardness in air cooling or oil quenching, no-scaling and non-corroding. To get the whole interesting story ask us for the folder.—J. G.



Strike Settlement Lays Pattern for Harmonious Labor Relations

(Continued from page 388)

ers and the Federation, labor had no direction in which it could turn effectively if the occasion demanded. Today that is not the case. Labor is assured of its right of collective bargaining in a much more substantial way and is protected from possible interference with that right by Presidential action.

One important factor in the automotive labor situation that has yet to be solved is the attitude of rival labor organizations — particularly the Mechanics Educational Society. Already its chief, Matthew Smith, has complained to the White House, and has threatened to call out M.E.S. members—mainly tool and die makers whose strike last fall was responsible for the delay in getting this year's models into production. Mr. Smith, according to published statements, doesn't like the idea of having his group represented through plant bargaining committees. Car manufacturers, however, are not fearful of this situation at the present time, as it is generally believed that the M.E.S. action is mainly for publicity purposes.

Interpretation of the President's settlement and statement by Federation leaders naturally do not coincide with those of the manufacturers. The A. F. of L. contends, for example, that the statement places seniority ahead of merit and efficiency in the question of layoff.

Moreover, pending further developments in the line of establishing effective machinery for collective bargaining, it can be said that the Federation unions will not cooperate with other employee representatives in such negotiations. "We will deal for and with our own people only," William Collins, national organizer in Detroit, told *Automotive Industries*.

In some respects, the settlement statement is lacking in clarity at many points and this may lead to further clashes which possibly will have to go to Washington for final adjustment. The statement by Mr. Collins just quoted, indicates one point where there is a difference of opinion. It is reported also that labor leaders hold that the right to organize into groups means the right

to organize unions, while management interpret it as a sanction of the works council. Moreover, the portions of the settlement dealing with membership rolls are not entirely clear. If the interpretation previously outlined to the effect that membership rolls must be submitted to manufacturers before a charge of discrimination can be sustained, is correct, it is not improbable that there will be further controversy over this point in face of the fact that the unions have consistently refused to disclose their membership rosters. Furthermore when it comes to making proportionate lay-offs, however, how the manufacturers can make them on this basis without previously having received union membership lists, is not clear.

Incidentally, in connection with the accuracy of union membership claims, during the last few weeks A. F. of L. rolls in such cities as Pontiac, Flint, Lansing, Detroit, Cleveland, Kenosha, Racine, etc., are said to have been heavily padded. At strike consideration meetings in these towns employees are reported to have been induced to sign 'application cards' to the A. F. of L. without requiring the payment of dues. The manner in which some, if not all, of these 'applications' were obtained

seems to leave considerable doubt that many signers are not legally liable for dues, and therefore under the President's ruling are not legally A. F. of L. members.

Following the settlement Alvan Macauley, N.A.C.C. president, said: "We are very grateful to the President and General Johnson, that they have been able to find a basis of settlement of the threatened automobile strike, that is in accord with the principles for which we have contended. The President's statement that the Government favors no particular union or particular form of employee organization or representation, and seeks only to secure absolute and uninfluenced freedom of choice without coercion, restraint, or intimidation from any source, should have great weight in establishing industrial peace in this country."

The committee which represented the N.A.C.C. in the conferences consisted of Alvan Macauley, Donaldson Brown, Roy D. Chapin, Walter P. Chrysler, Charles W. Nash, Alfred P. Sloan, Jr., Nicholas Kelley and John Thomas Smith. In the final stages, the negotiations were conducted by a subcommittee consisting of Messrs. Macauley, Nash and Kelley.

Eastman Report Would Put 150 Mile Limit on Truck Service

(Continued from page 393)

- strength, owned by the railroad companies which respectively serve them, operated by an independent management in which the public is represented, under contracts encouraging direct and economical routing but protecting the revenues of each participating carrier.
- Collect and deliver merchandise at the patrons' door and transport it in shock-proof equipment at overall speeds in excess of 20 miles per hour.
- Simplify classification, liberalize packing requirements and adapt the express system of charges to all

merchandise traffic by substituting for present scales a scale based upon cost plus a fair profit.

- Coordinate rail and highway, by contract, joint rates, lease or ownership, so that merchandise will be concentrated at and distributed from a limited number of key concentration stations by highway and moved between such stations by rail in car lots.

*Based on Survey of Conditions as indicated by statistics of 1932 operations.

New Process Employs Alternating Current to Rustproof Metal Parts

Developed by American Chemical Paint Co., "Granodizing" applies protective coating to sheet metal in three minute cycles

WHAT is said to be one of the first alternating current electroplating processes to be placed in large-scale commercial production has been announced by the American Chemical Paint Co., Ambler, Pa. The process, Granodizing is said to be a fool-proof means of coating sheet metal parts such as fenders, splashers, radiator shells and grilles, and similar parts with a rust-proofing and receptive foundation for paint, lacquer, or enamel.

The coating is tri-zinc-phosphate about 0.0005 in. thick, smooth in finish, the utility of which depends upon the virtue of being chemically insoluble and thus impervious to the action of moisture. Because of the electrolytic action in the bath, the coating is said to be continuous and without pinholes so that no weak spots can occur at any point. The process uses A. C. current of commercial frequencies and voltages; direct current cannot be used. Its economic value lies in the fact that work is coated in a three minute cycle, using a current density of 110 amp. min. per sq. ft. of surface. One gallon of GRANODINE, the preparation used in this process, is said to coat approximately 2000 sq. ft. of metal. It is claimed that the total cost of current and chemicals will run well under 25 cents per 100 sq. ft. of the surface coated.

Granodizing requires the use of the chemical, Granodine No. 30, which is diluted with water to a concentration of from 4 to 7 per cent by volume. The tank equipment may be of con-

ventional design, using a steel tank serving as one of the electrodes. Since the process depends upon a precise control of current density and voltage, its installation requires the use of an electrical control unit called the Granodizer, made by General Electric Company.

For Granodizing, the metal surface must be chemically clean as for any other electroplating process, the operations in general consisting in the removal of scale by pickling; removal of rust by cleaning with Deoxidine; removal of oil and grease by cleaning in an alkaline solution or by degreasing in a vapor degreaser. After cleaning, the surface is coated by immersion in the electroplating tank and then goes through a plain water rinse. It is rinsed first in cold running water, then dried by immersing in hot water. No wiping or tack-ragging is required.

The operation of the bath is said to be extremely simple, requiring only occasional titration to determine its composition, principally to determine when more of the basic chemical is needed.

The bath is quite stable and not subject to any marked fluctuations. It is maintained at 170° deg. F. by steam coils, thermostatically controlled. If the solution is overheated for a prolonged period the equilibrium is impaired, producing a coating of unusually crystalline structure. Equilibrium can be readily restored by the addition of the proper amount of sodium hydroxide.

Because of the use of alternating

current the process is said to lend itself to the utilization of multiple lines of work-carrier bars inasmuch as the alternating polarity in the bath increases the throwing power by making formed electrodes of the work pieces. Using an odd number of lines, each one of different polarity, there is an interchange of the electrochemical effect between the adjacent sides of the work as well as between the work and the sides of the tank.

There is no royalty fee attached to the use of the process, the only obligation being the use of the essential elements of the system—the Granodizer and the Granodine chemical.

Granodizing as described above is applied to the electroplating of sheet metal surfaces. However a plating method by simple immersion and without the use of electric current or the Granodizer may be effectively applied to provide a rust-resisting, paint-receptive foundation on zinc die castings, and electro-galvanized or cadmium plated steel.

This simple process utilizes Granodine No. 31, one gallon of the chemical being sufficient to coat about 2000 sq. ft. of metal surface. A steel tank is used as in the electroplating process, the temperature of the bath being maintained between 160 and 180 deg. F. The work must be chemically cleaned prior to immersion by the usual methods as mentioned earlier and preferably brushed if a very smooth coating is desired.

The time required for immersion is only 10 to 25 seconds. After coating, the work is thoroughly rinsed in cold running water, followed by a hot rinse to dry. The work should be tack-ragged before applying paint or enamel.

Wolman, Kelley and Byrd Form Board to Mediate Industry's Labor Controversies

Government Names Head of NRA Labor Advisory Board With Long Record of Union Activity As Its Impartial Representative—Industry Names Chrysler Corp. Counsel

WASHINGTON—Dr. Leo Wolman, Columbia economics professor and head of the NRA Labor Advisory Board, has been named by General Johnson as the impartial member of the mediation board created by the President's settlement of the automotive labor controversy.

Nicholas Kelley, Chrysler counsel, has been selected by the N.A.C.C. to represent the manufacturers, while Richard Byrd, secretary of the A. F. of L. local at General Motors Truck, will represent labor.

The first meeting of the board was called for Detroit on Wednesday evening.

Dr. Wolman's appointment was not received with any great enthusiasm by either side which perhaps is a recommendation in itself. He has not seen eye-to-eye with American Federation of Labor officials on many matters of policy, while his long experience in union organization work has raised some question as to his fitness in industrial circles. He is the author of numerous works on social and economic problems and has conducted investiga-

tions for several outstanding research organizations. He also was economic advisor to a militant union in the clothing field. In addition to his duties at NRA, he is a member of the National Labor Board.

Mr. Kelley is a son of the late Florence Kelley, organizer of the Consumers' League, a proponent of the child labor amendment and an advocate of social legislation. Although he is a corporation lawyer, he is regarded as a liberal and has long been interested in labor relations problems. He was assistant secretary of the Treasury in the Wilson administration.

Mr. Byrd was at one time an employee of the Fisher Body Corp., rising to the post of safety director at Pontiac and Detroit plants. Depression is said to have cost him his job. Last August it is reported he was employed by General Motors Truck. Subsequently he became active in union affairs where his ability, particularly as a speaker, brought him to the top. He is a veteran of the World War and placed second in the discus at the Stockholm Olympic Games in 1912.

The automobile labor mediation board



Dr. Leo Wolman, left; Richard Byrd, lower left, and Nicholas Kelley, lower right



March 31, 1934

NEW

Sloan Hits Closed Shop in GM's Annual Report

NEW YORK—A vigorous attack on efforts to force the closed shop on American business, a frank criticism of price controls that protect inefficiency, and outspoken opposition to further drastic shortening of hours, characterize President Alfred P. Sloan's annual report to the stockholders of the General Motors Corp.

The report shows 1933 earnings totaled \$83,213,676 on sales of \$569,010,542, as contrasted with 1932 net profit of \$164,979 on a volume of \$432,311,868. The Dec. 31, 1933, balance sheet reveals a continued increase in working capital to a total of \$243,832,896 which compares with \$225,437,194, a year earlier. Current assets at the end of 1933 amounted to \$320,015,607 including \$177,303,966 cash and securities, and current liabilities to \$76,182,711.

Plymouth Adds DeLuxe Sedan

DETROIT—Plymouth Motor Corporation announces the addition of a deluxe town sedan. It is priced at \$685 list. It is a close coupled 4-door model with built-in trunk. Rear quarters are blind. It is mounted on the 114-in. chassis with independent springing.

Nash Strike Continues

KENOSHA, WIS., March 28.—Strikes which have tied up plants of the Nash Motor Company and subsidiaries have not been ended by the settlement of automotive labor troubles effected by President Roosevelt, although the company understands that it is covered by the agreement.

G.M. of Canada Booms

OSHAWA, ONT.—General Motors of Canada, Ltd. is now operating at highest pressure since 1929 with 3000 on its payroll and the staff being enlarged weekly. The company reports export sales up 700 per cent over figures for the same period of last year.

Automotive Industries

NEWS

March Production 320,000 with Material Shortages Reducing Output in Some Plants

General Motors Output for the Month About 130,000, Ford About 75,000 and Chrysler Over 70,000—Lack of High Production Equipment Holding Up Operations

by Athel F. Denham,

Detroit Editor, Automotive Industries

DETROIT—Although the last week showed a continued gain in output for the month, production totals apparently may be somewhat under earlier estimates. A total for the industry of between 310,000 and 320,000 cars and trucks is now indicated of which Gen-

eral Motors will account for approximately 130,000. Ford is estimated at between 75,000 and 80,000, and Chrysler at between 70,000 and 75,000.

The major delay in production is due to inability to secure adequate materials and parts inventories. Chrysler and DeSoto Airflow models are still lagging in production apparently as was the new Oldsmobile Six until a week or so ago. Hupmobile is just starting production on its new line and Reo is not well under way yet on its low-priced six. Particularly handicapping some parts producers at present is lack of adequate high production equipment to keep up with car manufacturers' orders.

The recent strike threats seem to have contributed little to reducing production except, of course, in the case of Nash, where strikes were actually in effect. Apparently there was some decrease in man-hour efficiency in some plants but this was offset partially by increased employment.

During the week ending March 17, Dodge dealers made retail deliveries of 4,212 passenger cars and 952 trucks, a total of 5,164 vehicles, against 4,732 deliveries recorded for the preceding week. Retail deliveries by Dodge dealers in the first eleven weeks of this year were 35,024 passenger cars and trucks. Compared to 15,396 deliveries during the same eleven weeks of 1933, the latest Dodge delivery statement marks a gain of 127.5%.

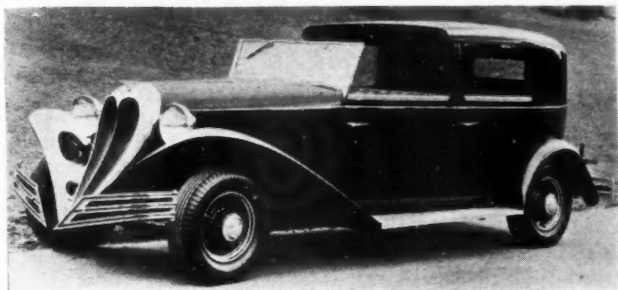
With more than 8500 orders for March shipment, the first six months of Studebaker 1934 models promises to be the greatest of all corresponding six months periods since 1929, according to Paul G. Hoffman, president of the Studebaker Sales Corporation of America. Mr. Hoffman made public the tabulation of production of Studebaker cars during October-March periods since October, 1929. It follows:

Period	Cars Produced
Oct. 1, 1929-March 31, 1930.....	26,215
Oct. 1, 1930-March 31, 1931.....	24,443
Oct. 1, 1931-March 31, 1932.....	28,606
Oct. 1, 1932-March 31, 1933.....	14,957
Oct. 1, 1933-March 31, 1934.....	34,363

O'Neil Forecasts a 50% Increase in Tire Prices

AKRON—A 50 per cent increase in tire prices within the next year is predicted in a statement issued by W. O'Neil, president of the General Tire and Rubber Co.

A Ford for \$3500



Brewster body on 127-in., modified Ford V-8

Mack Negotiating to Sell Ford Truck Line

NEW YORK—Rumors of negotiations between Mack Trucks, Inc. and the Ford Motor Company concerning an arrangement whereby Ford trucks would be sold and serviced through Mack branches, were confirmed this week by A. J. Brosseau, Mack president. He stated, however, that no immediate decision was in prospect.

At the annual meeting of stockholders, E. R. Hewitt and W. D. Sargent were elected Mack directors succeeding A. H. Wiggin and F. B. Adams. Other directors were reelected.

NRA Organizing to Speed Enforcement

WASHINGTON—To secure more effective administration, NRA is being extensively reorganized internally under the direction of W. A. Harriman, assistant administrator. The move is directed at speeding up action on questions of policy, interpretation and enforcement.

A litigation division is being established which will handle all court cases for the Justice Department. In addition, each deputy administrator is to have legal, economic, labor, industrial and consumer advisers, and each will be expected to get quick action on matters affecting the codes under his jurisdiction.

Each of the seven division administrators will have assistants for enforcement, code authority organization and code administration.

Budd Case Closed

WASHINGTON—The Budd dispute is considered to be a closed incident by NRA. The attitude of the Recovery Administration is that all interested parties were given an opportunity to vote in a poll and that almost all failed to take advantage of it. Consequently, no further action by NRA is considered necessary. Meanwhile, representatives of the Federation Union at the Budd plant are reported to have been in Washington this week in behalf of strikers who they allege have not been reinstated.

AC Begins Production of Engine Bearings in June

FLINT—The AC Spark Plug Co. is installing equipment for the production of bronze-lined, steel-backed engine bearings, preparatory to entering the bearing business, according to an announcement by Fred S. Kimmerling, president of the company. Production is expected to start June 1 with an initial rate of 600 bearings per hr.

New Reo Flying Cloud Six Carries Prices Ranging from \$795 to \$975

LANSING, MICH.—Full details of changes in design and prices on the new Flying Cloud six-cylinder line for 1934 were revealed this week by the Reo Motor Car Company. These new models were first exhibited at some of the larger automobile shows last winter, but details and prices were withheld. The patented self-shifter transmission, featured by Reo last year, is retained, being special at \$75 extra on the standard models and regular equipment on the de luxe models. Prices of the standard and de luxe models are as follows:

Standard Models	
2-p. Business Coupe.....	\$795
2-4-p. Standard Coupe.....	895
Standard Sedan	895
Convertible Coupe	925
De Luxe Models (with painted fenders, 5 wire wheels)	
Coupe	\$945
Sedan	945
Convertible Coupe	975

Quite a number of improvements have been made in chassis details and particularly in the control mechanism. Thus the starter button has been placed underneath the clutch pedal so that the engine is automatically started when the clutch pedal is depressed. The clutch and brake pedals are now mounted on the frame, this change being called for by alterations in the engine mounting allowing the engine greater freedom of motion relative to the frame.

High speed alloy valve-seat inserts are now used for the exhaust valves. One more oil-scraper ring is placed on each piston, this taking the place of a compression ring in the previous model. It will be remembered that last year the engine had a five-point support on the frame. One of these points of support, constituted by a torque arm,

has been eliminated, so that the mounting is now of the four-point type. Since the original announcement of the Flying Cloud with self-changing transmission last year the crankshaft has been increased in diameter from 2 5/16 to 2 5/8 in. and the weight from 77 to 83 lb.

The frame has been lengthened in accordance with body changes and direct-acting shock absorbers are now used.

Extensive changes have been made in the front end of the car, materially improving its appearance. A new front bumper, a new radiator grille and shell design, a new hood, new louvers, new fenders and shields, and new body lines all contribute toward a lower and more graceful appearance. Molded into the rear panel of the sedan is a roomy built-in luggage compartment, easily accessible from the outside. It is provided with a tight-fitting cover seated in rubber and secured by two combined fasteners and locks, which are said to keep out all dust and water.

A "draftless" system of ventilation for both front and rear compartments is featured. When the one-piece glass in the front door has been raised to the limit by means of the regular crank, continued motion of the crank slides the glass backward, and air is then drawn out of the car by a slight vacuum formed by the motion of the car immediately behind the windshield pillar. The rear-quarter windows of the sedan are so pivoted that the forward edge swings inward and the trailing edge outward, which is said to result in vacuum ventilation of the rear compartment.

The instruments, which are of large size, are arranged under convex glass crystals and indirectly illuminated. Various controls and the doors for two

roomy glove and map compartments are also arranged on the instrument board. A fine-mesh screen of rust-proof wire in the large cowl ventilator keeps insects and air-borne litter out of the car.

Improvements have been made also in the interior trim. Window moldings and instrument panel are finished in brown walnut, and single bright metal parts, including window regulators, door handles and some of the controls on the instrument panel, are finished in bright chromium. Catalin knobs and collars resembling onyx add to the appearance of door handles and window regulators. The cushions are tailored in mohair or Bedford cord laid in wide pleats. In the sedan, convenient pockets are provided below the rear-quarter windows and immediately over the arm rests.

NACC Factories Raise Wages and Cut Hours

DETROIT—The N.A.C.C. recommendation to increase wages 10 per cent and reduce annual average hours by an equal percentage, will be put into force by Chamber members on March 31. The automobile code now permits employment for 40 hr. weekly averaged over the year. The effect of the readjustments now in progress will be to reduce this maximum average to 36 hr. without reducing weekly earnings of the employees.

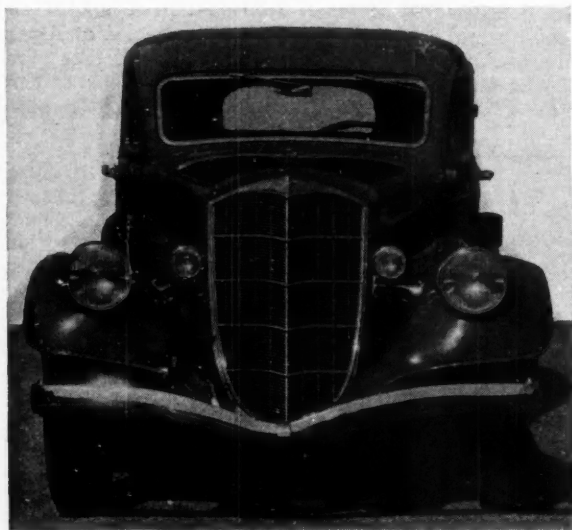
Companies making the N.A.C.C. recommendation effective include Buick, Cadillac, Chevrolet, Chrysler, DeSoto, Dodge, Graham, Hudson, Hupp, Olds, Packard, Plymouth, Pontiac and Fisher Body.

February Car Sales Gain 69% in Value Over 1932

WASHINGTON—Preliminary estimates of the value of retail sales of new passenger automobiles, computed from the number of cars sold as reported by the National Automobile Chamber of Commerce, show an increase of 69 per cent for the month of February as compared with February, 1933, and an increase of 28 per cent as compared with February, 1932, according to the Bureau of Foreign and Domestic Commerce. As compared with January there was an increase of 106 per cent.

Canadian Chrysler Near Record for Employment

WINDSOR, ONT.—Increasing demand for automobiles both domestic and export has brought a steady increase in employment at the plants of the Chrysler Corporation of Canada, Ltd. in the Border Cities, where at the middle of this month the payroll included 1664 men and women, only 159 less than the all time record of 1823 in the spring of 1929.



Front view of new
Pierce-Arrow Model
836A which has a
base price of \$2,195

March 31, 1934

Automotive Industries

Even in the U.S.S.R.
Merit Determines Pay

Continuing the drastic reorganization of Soviet economy, the *Christian Science Monitor* reports, the Central Executive Committee has decreed revisions of the labor code tending to emphasize superior wages for superior workers. The most important alteration provides abolition of a fixed minimum wage.

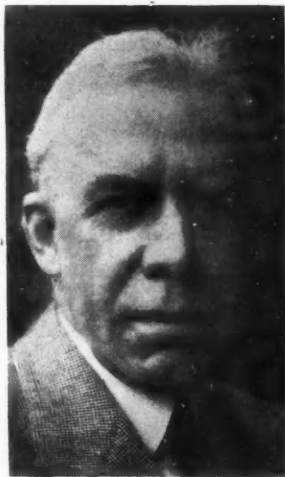
The decree states: "If a worker fails through his own fault to fulfill the plan outlined for him, he will be paid according to the quality and quantity of work done, with no minimum wage. If the plan is unfulfilled through no fault of his own, he must be paid at least two-thirds of the agreed wage."

Workers systematically failing to fulfill the outlined work must be discharged or transferred to other work, the decree stipulates. The Government's allied republics are instructed to revise labor codes in accordance with the new fundamentals thus outlined.

NRA Names Haynes Member
Of Auto Code Authority

Gage Becomes Administration
Member of A.P.E.M. Authority

WASHINGTON — Frederick J. Haynes has been named administration member for the Code Authority for the Automobile Manufacturing Industry by



Frederick J. Haynes

Administrator Hugh S. Johnson of the National Recovery Administration. At the same time Mr. Haynes' appointment was announced, General Johnson also revealed that Ralph H. Gage had been appointed administration member of the A.P.E.M. Code Authority, and Howard B. Hall, administration member of the Wholesale Automotive Code Authority.

Medium-Priced Cars and Heavier Trucks
Register Big Gains in First Two Months

WASHINGTON—A sharp and encouraging recovery in the production of cars selling at the factory between \$500 and \$1,000, corresponding roughly to a retail price bracket of \$650 to \$1,350, is revealed by an analysis of output in the first two months of this year. The improvement is particularly important because a big majority of the manufacturers in the industry produce cars selling in this price range and hence this year's output gains presage a broader distribution of benefits than last year when increases were confined mostly to the lowest-priced field.

The figures for the first two months also show a substantial improvement in the production of trucks of more than two tons which indicates that heavy-duty types are sharing in the recovery.

Total production in the first two months in the \$501-\$750 wholesale price class was 81,480 as contrasted with only 34,402 in the same period last year, a gain of 137 per cent. The \$751-\$1,000 group shows nearly as large a percentage gain with an increase of 110 per cent. As a consequence of these increases, the percentage of total production in the \$501 to \$750 group rose from 16.7 in the first two months of last year to 25.6 per cent this year. Similarly the \$751 to \$1,000 class enjoyed an increase in percentage of total from 3.3 to 4.5. Of course, the upward shift is due in part to the somewhat higher prices prevailing this year. But, in any case, the data indicate that the increase in dollar volume is even larger than the increase in units.

The detail figures are given below:

	1934		Per Cent Change	Per Cent of Total	
	1934	1933		1934	1933
\$500 and under...	214,907	155,918	+ 38	67.4	75.8
\$501-\$750	81,480	34,402	+137	25.6	16.7
\$751-\$1,000	14,354	6,734	+110	4.5	3.3
\$1,001-\$1,500	3,915	4,754	- 18	1.2	2.3
\$1,501-\$2,000	2,106	2,082	+ 1	.7	1.0
\$2,001 and up.....	1,918	1,945	- 1	.6	0.9
Total.....	318,680	205,835	+ 55	100.0	100.0

Passenger Car
Production by
Wholesale Price
Classes

Truck
Production
by
Capacities

	1934		Per Cent Change	Per Cent of Total	
	1934	1933		1934	1933
1½ tons and under	87,627	35,854	+144	93.9	95.0
2-3 tons	4,667	1,478	+216	5.0	3.9
3½ tons and over..	701	279	+151	.8	0.7
Special & Buses..	262	138	+ 90	.3	0.4
Total.....	93,257	37,749	100.0	100.0

Mr. Haynes succeeds Deputy Administrator K. J. Ammerman who withdrew from the Code Authority in conformity with the NRA policy of relieving its officials of such responsibility. Mr. Haynes is widely known throughout the automotive industry, having been president of Dodge Bros. and of Durant Motors as well as a vice-president and director of the Franklin Automobile Company. He was also a director of the N.A.C.C. for several years and more recently has been treasurer of the Chamber as well as chairman of its patents committee.

Mr. Gage, who succeeds Mr. Ammerman on the A.P.E.M. Code Authority, is secretary and director of the Gage Structural Steel Co.

Mr. Hall is a partner in the engineering firm of Murray and Flood, New York, and at one time was president and general manager of the Bethlehem Motors Corp.

Detroit Alloy Steel Co.
Elects Kluender & Kreller

DETROIT—Herman F. Kluender has been elected vice-president of the Detroit Alloy Steel Co. The company also announces that Edward A. Kreller has been elected to the board of directors. Mr. Kreller is works manager of both the Detroit Alloy Steel Co. and the Detroit Gray Iron Foundry Co.

G. P. & F. Names Three

MILWAUKEE—Geuder, Paeschke & Frey Co., Milwaukee, stamped and pressed metal division, have made the following appointments: Arnold L. Nacke, 50 Church Street, New York City, for the metropolitan district; G. Douglas Morse, 542 High Street, West Medford, Mass., for the New England district; and Gustav A. Reinhard, 1935 Euclid Avenue, Cleveland, Ohio, for the Cleveland district.

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries

General business continued to improve last week, despite threats of serious labor disturbances. The upward tendency in industrial operations was resumed after the irregularity of the preceding week. Retail trade was well maintained and did not appear to be adversely affected by the unseasonably cold weather over large sections of the country. Wholesale business was very active. Price movements in commodity and security markets were irregular, with reactionary tendencies in some directions.

Wholesale Prices Steady

The index of business activity of the Guaranty Trust Company for February stands at a preliminary figure of 69.6, as against 65.5 for January and 56.1 for February last year. The wholesale price index for March 15 stands at 54.4, as compared with 54.7 a month earlier and 35.3 a year earlier.

Freight Loadings Increase

The volume of railway freight traffic continues to expand seasonally. Loadings during the week ended March 17 totaled 625,773 cars, showing an increase of 13,371 cars, or 2.2 per cent, over the total for the preceding week and an increase of 172,136 cars, or 38.0 per cent over that for the corresponding period last year.

Retail Sales Rise

Department store sales in the metropolitan area of New York, including liquor sales, increased 36.4 per cent during the period from March 1 to March 15, as compared with sales for the similar period last year. Exclusive of liquor sales, the increase amounted to 32.9 per cent.

Construction Jumps

Construction contracts awarded in 37 States in the first half of March, according to the F. W. Dodge Corporation, had a total value within 4 per cent of that reported for the entire month of February and 55 per cent above that for the entire month of March, 1933.

Power Tops 1933 by 20 Per Cent

Production of electricity by the electric light and power industry for the week ended March 17 was 20.0 per cent larger than a year earlier, when the bank holiday was in effect, and was 7.4 per cent above the total for the similar period two years ago.

Oil Production Firm

Average daily crude oil production for the week ended March 17 amounted to 2,378,100 barrels, as against the Federal allowable of 2,282,800 barrels, an average daily output of 2,313,900 barrels in the preceding week, and an average of 2,126,450 barrels a year ago.

Fisher's Index

After several weeks of continuous advance, Professor Fisher's index of wholesale commodity prices declined during the week ended March 24, standing at 74.1, as against 74.6 a week before, 74.5 two weeks before, 74.4 three weeks before, and 74.2 four weeks before.

Federal Reserve Statement

The volume of Federal Reserve bank credit outstanding declined \$24,000,000 during the week ended March 21. The monetary gold stock increased \$35,000,000 while the amount of money in circulation decreased \$11,000,000.

German Diesel Exports Drop In Value; Gain in Numbers

Exports of Diesel engines from Germany during 1933 registered a decline in value of 39 per cent compared with the preceding year, according to a report from Vice Consul J. H. Wright, Cologne, made public by the Commerce Department. A slight increase, however, the report shows occurred in the number of engines shipped during 1933.

Referring to the domestic market, the report shows that the German Diesel engine industry experienced a revival during the latter half of 1933.

Reo Loss Is \$2,587,654

LANSING—A net loss of \$2,587,654 is reported for 1933 by the Reo Motor Car Company. This loss is after provision of \$1,096,988 for loss on deposit accounts in closed banks. In 1932 the company sustained a net loss of \$2,878,-

938. Sales for 1933 totalled \$10,259,660 as compared with \$9,096,329 in the previous year. Current assets on Dec. 31 last were \$7,886,952 including \$1,750,766 cash, against current liabilities of \$954,763.

Eastman Regulatory Bill Is Introduced

WASHINGTON—Senator Clarence C. Dill (D., Wash.) has introduced in the Senate the bills prepared by Joseph B. Eastman, Federal Coordinator of Transportation, proposing regulation of bus and motor freight transportation (S. 3171) and regulation, of water transportation (S. 3172). They have been referred to the Committee on Interstate Commerce, but no subcommittee assignment has been made. S. 3171 is similar to the Rayburn bill (H. R. 6836) which met vigorous opposition from truckers and shippers.

It is fairly well agreed among Washington observers that these bills will not get far in the present session of Congress unless the President makes them a part of his Administrative program. On two separate occasions, at White House press conferences, however, he has indicated little or no interest in their immediate passage.

Pontiac Shifts Sales Department Personnel

PONTIAC—L. K. Marshall, whose appointment as Pontiac parts and accessories merchandise manager was reported last week in *Automotive Industries*, will combine his new responsibilities with his former duties as service manager. O. A. Lamoreux, formerly central region parts and service manager, has been appointed Mr. Marshall's assistant.

O. V. Klemm, formerly assistant car distribution manager, has been advanced to the position of car distribution manager, replacing R. T. Gundry, who has been made manager of the car order department. W. I. Gibson has been appointed a special representative. His previous position as Pontiac office manager will be taken by E. J. Galer, who has been his assistant.

"Camel-Backs" at Metropolitan Section

NEW YORK—"Trends and Future Developments in Truck Design" is the topic of a paper to be read by Joseph Geschelin, engineering editor, *Automotive Industries* at the next meeting of Metropolitan Section, S.A.E., April 19.

The paper is chiefly concerned with the new "camel-back" trucks which have made their appearance recently and discusses certain elements of every make now on the market. The reasons for adopting this construction are covered in detail.

Traffic Group Urges Headlamp Law Changes

Finds Need for More Light and Modernization of Laws

WASHINGTON—Traffic authorities, members of a committee of the National Conference on Street and Highway Safety on Uniform Traffic Laws and Ordinances, convened in Washington this week for a series of meetings.

The first three days of the meeting were devoted to work by a drafting subcommittee and the next three days, March 22-24, the main committee on Uniform Traffic Laws and Ordinances was in session.

In preparation for these meetings special subcommittees dealing with important divisions of the work have met during the past several weeks in New York City and Washington and their findings and recommendations were considered at the meetings in Washington this week.

Motor vehicle lighting equipment requirements and the question of enforcement of these requirements were reviewed at a special meeting. It was the consensus of opinion of those in attendance that the lighting provision of many of the present state motor vehicle laws are out of date, having been written on the basis of single beam equipment whereas the greater number of motor vehicles on the road today are equipped with lights which project more

than one beam. In view of the greatly increased speeds now prevalent on the open highways, particularly at night, it was held that adequate illumination with attention to the need for avoiding glare is becoming increasingly important. The special committee's recommendations are expected to make for greater safety and at the same time greater comfort to all users of the highway.

Other matters before the committee which were of special importance, included speed regulation and other rules of the road, motor vehicle equipment, sizes and weights, highway patrols, mechanical equipment inspection, drivers' license laws, financial responsibility, and administration.

All of the matters under consideration by the committees meeting in Washington this week will be presented for final action by the Fourth National Conference on Street and Highway Safety to be held in Washington later in the year.

Among the industry's representatives at the meeting were David Beecroft, Bendix; D. C. Fenner, Nash; and Pierre Schon, G.M.T.

Mengel Co. Reports

LOUISVILLE, KY.—Report of the Mengel Company and its subsidiaries including Mengel Body Co. for the year ended Dec. 31, 1933, shows net loss from operations of \$471,237. Net sales for the year amounted to \$4,997,404.

Mr. Jonker's Car



It was a Vauxhall, product of a General Motors' British Subsidiary, which Mr. Jonker, South African prospector, bought following his find of a 726 carat diamond, we are informed by C. R. Evans, assistant general sales manager of General Motors Export Co. Mr. Evans wrote us to correct an item in our issue of March 3 which stated that the first thing Mr. Jonker bought after his discovery was a Studebaker. Mr. Evans' letter was accompanied by the photograph reproduced herewith which shows "Tommy" Redlich, Vauxhall dealer, with the car on his left and Mr. Jonker on his right.

Kleiber to Sell Studebaker Trucks on Pacific Coast

SOUTH BEND—W. H. Edwards, general manager of Studebaker's Truck Division, announces that arrangements have been made for the Kleiber Motor Company of San Francisco and Oakland to distribute Studebaker trucks in nine counties of California. Kleiber will continue to manufacture and sell heavy-duty Diesel-engine trucks.

In January Studebaker announced that the Nelson-LeMoon Truck Company were assuming the distributorship for Studebaker trucks in North-eastern Illinois. In February the Auto-car Company of Philadelphia announced that in addition to its own line of heavy-duty trucks it would distribute Studebaker trucks through factory branches in Philadelphia, Baltimore, Washington, Norfolk, Atlantic City, Camden and St. Louis.

1933 Canadian Sales 5% Under 1932 Mark

MONTREAL—The final spurt in car sales late in 1933 was not sufficient to overcome the low level of sales early in the year, and the total of new passenger car registrations for Canada reached the unofficial figure of 39,936 as compared with 42,219 for the preceding year. The decrease which amounts to about 5 per cent, was nearly as predicted. Exports fortunately were sufficiently increased to take care of the production slack to the extent that the Canadian passenger car output all told was greater than for the previous year.

American Chain Reports

BRIDGEPORT, CONN.—American Chain Company, Inc. and subsidiaries report 1933 net loss after charges of \$431,765 against loss of \$2,986,438 in 1932. Current assets on Dec. 31, 1933, including \$1,248,146 cash and marketable securities, amounted to \$8,120,621 as contrasted with current liabilities of \$648,182. In the last half of 1933 President W. B. Lashar states that sales were 65 per cent more than in the corresponding 1932 period.

Wisconsin NRA Names Heil

MILWAUKEE—Julius P. Heil, president of the Heil Co., Milwaukee, was elected chairman of the new State NRA Advisory Board of Wisconsin at the organizational meeting. Mr. Heil also is chairman of the Milwaukee County compliance board under NRA.

Bendix Earns \$1,242,891

SOUTH BEND—Bendix Aviation Corporation and domestic and Canadian subsidiaries, report for 1933 net profit after all charges and provision for amounts due from closed banks, of \$1,242,891 as contrasted with a net loss of \$1,601,242 in 1932.

Automotive Payrolls Jump 22 Points in February

(Federal Reserve Board Indexes—1923-1925=100)

	Feb., 1934	Jan., 1934	Feb., 1933
Payrolls	77	55	32
Employment	86	71	50
Employment*	85	75	49
Production*	73	58	33

*Seasonally adjusted.

Higher Wages to Bring Steel Price Increases

Settlement of Automotive Labor Dispute Ends Worry About Steel's Best Market

NEW YORK—The steel industry breathes easier this week, and every day sees finishing plants stepping up operations a notch or two in response to the greater volume of specifications and shipping orders that are being released by automotive consumers.

The American Iron and Steel Institute's estimate of the current week's operating rate is 45.7 per cent of ingot capacity as compared with 46.8 per cent last week, but it is generally the impression in the trade that the slight dip was more than made up for on the first three days of the week.

Almost simultaneously with the news of the settlement of the labor difficulties in the automobile field, came announcement that the steel industry would raise the wages of its operatives 10 per cent on April 1. There is no blinking the inevitable consequence of this decision which means that automotive consumers will be face to face with another advance in steel prices before very long. Steel producers say that to absorb even part of the increased production costs during the quarter now beginning would constitute too much of a burden for many of the smaller companies, and that passing on to the consumer of the greater share of the cost increase is inevitable.

In view of the fact that the 10 per cent wage increase was decided upon as a preventive measure to avoid further inroads by unionist agitators, the conviction prevails in the steel market that little resistance will be offered by automotive buyers to whatever mark-ups may be necessary to provide a reasonable offset to increased production costs.

Second-quarter order books have been kept relatively light, largely due to the reluctance of buyers to commit themselves, but to some extent also to the unwillingness of steel sellers to take on business for material not required for current consumption.

Pig Iron—Quite a few automotive foundries have covered their second-quarter requirements and shipments continue to show a rising trend, the tonnage of iron forwarded to melters in March being at least one-third greater than was the February movement.

Aluminum—Quiet and firm.

Copper—Rumors circulate to the effect that, regardless of what the continuing code negotiations may lead to, there will be a gentlemen's agreement not to let the market dip below 9 cents. Mining states' Senators are also reported to be active in an effort to have the Reconstruction Finance Corporation finance purchase of the surplus accumulations of copper. The market for the present remains at 8 cents, delivered Connecticut Valley point.

Tin—Spot Straits tin was quoted at 54½ cents at the beginning of the week. A year ago the market price was 24½ cents.

Lead—Fairly active and unchanged.

Zinc—Easy and dull.

William M. Webster

CHICAGO—William M. Webster, Commissioner of the former Automotive Equipment Association, and prominently identified with other industries as a trade association executive, died at his home here on March 27. He was 71 years of age.

Mr. Webster was one of the organ-



William M. Webster

izers of the old National Association of Automobile Accessory Jobbers, forerunner of the later Automotive Equipment Association. He was executive head of the latter organization from its inception until his resignation in the spring of 1928.

Federal Cuts Loss

DETROIT—Federal Motor Truck reports a net loss after charges of \$165,062 in 1933 as compared with a loss of \$631,249 in 1932.

Wagner Bill Threat Melts Under Attack

Labor May Withdraw Support

As Industry Forces Drastic

Changes in Its Provisions

WASHINGTON—Although important amendments to the Labor Disputes Bill have been accepted by Senator Wagner, its ultimate fate is a lot less certain than it was a week ago. The revisions make the Bill more acceptable to industry, but there are indications that they are so objectionable to labor that it may withdraw its support.

Acceptance of the revisions followed slashing attacks on the Bill by industry at hearings during the early part of the week. They were also in part an outgrowth of the settlement of the threatened automobile strike effected by the President.

Among the amendments accepted by Senator Wagner is one which would classify as unfair labor practice, coercion on the part of labor unions to force workers into their organizations, as well as by employers. Another revision recognizes the company union where it is the free choice of the workers. The section which abrogates existing contracts between management and company unions, has been eliminated. Moreover, the Bill will be altered to permit court review of the law and the facts arising out of decisions of the National Labor Board which the Bill would create. There is also a possibility of an amendment making labor organization financially responsible.

The most devastating attacks on the Bill came from James A. Emery, general counsel of the National Association of Manufacturers, and from Henry I. Harriman, president of the United States Chamber of Commerce. In addition to declaring the Bill unconstitutional, Mr. Emery asserted that it was one-sided, would eliminate well-established and satisfactory company union relationships, would not equalize bargaining power, would place no limits on the actions of labor, while circumscribing employers, would lead to a union monopoly and that it would foster strife.

Mr. Harriman also emphasized that the enactment of the Wagner Bill would promote strife at a time when the country needs peace so that recovery may continue uninterrupted. He charged that the labor sections of the Recovery Act were acceptable to labor when the law was passed but that now they are dissatisfied with their progress in expansion, and therefore "would add to the labor provisions of the Recovery Act something so wholly different as to violate American principles, as to prevent free and fair discussion between employer and employee, and so one-sided as to breed rather than allay labor disputes and disorder."

NRA Commission OK's Code Price Controls

Attacks Differentials to Large Distributors Which Savings Do Not Justify

WASHINGTON—In addition to endorsing the open price association, the report to NRA of the Distribution and Consumer Service Trades Commission, an outgrowth of the recent general code conference, makes a number of recommendations of far-reaching importance to coded industries and trades. Some of the more important conclusions in the report are summarized in the following:

1. The open-price principle offers protection against predatory price cutting and chiseling. Manufacturers should be required to file prices on all products they produce. The prices should be filed both with the code authority and NRA, and the latter should check them periodically as to uniformity and as to the reasonableness of advances. Where prices are filed for various classes of customers, they should show quantity differentials which should not be allowed to exceed the economic savings resulting from the larger volume. All prices filed should be open to public inspection.

2. To protect small businesses, it is recommended that base costs below which sales may not be made, should approximate the market or invoice cost of the efficient small operator. Reasonable and fair differentials in purchase prices due to sound economic reasons should not, however, be barred. Many businesses, it is asserted, are suffering

as the result of price differentials allowed large distributors which are out of proportion to the actual economics effected through quantity purchases.

3. Reductions in hours and increases in wages should be negotiated on an individual basis, rather than established by a blanket order. The report urges stricter enforcement of present hour and wage standard as an immediate means of reducing unemployment and increasing purchasing power.

4. The tendency toward monopoly and oppression of small business, is a result of administration, rather than of code provisions. To meet this trend, careful selection of code authority members is recommended, as is also the giving of notice to affected parties on all proposed interpretations, regulations and revisions of codes.

5. Quicker and more effective enforcement, coupled with an appeal to the public to report violations.

A Correction

We are reliably informed that General Motors has not acquired patent rights to an automatic jacking system as reported in our issue of March 17. We regret publication of this erroneous report greatly and hope that this correction will end any misapprehension it may have created.

Doehler Reports Earnings

NEW YORK—Doehler Die Casting Company reports net profit for 1933, after charges of \$232,933 which contrasts with a net loss of \$98,497 in 1932.

Diesel Car Sets Speed Records at Montlhery

PARIS, March 20 (by mail)—Officially timed by the Automobile Club of France, a six cylinder A. E. C. Diesel, driven by G. E. T. Eyston, attained a speed of 115.41 miles for the flying kilometer and the flying mile and practically the same average for 10 kilometers, on Montlhery track yesterday. This is claimed to be the highest speed ever attained by a heavy oil engine.

The car used for this performance was a streamlined sedan weighing 6048 pounds, equipped with a six cylinder engine of 115 by 142 mm. bore and stroke, built by the Associated Equipment Company, and of the same type as those used on several hundred London buses.

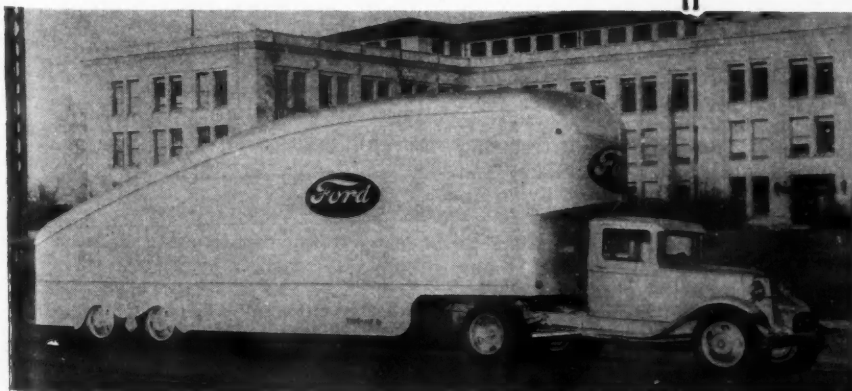
The engine is an overhead valve type with pushrod operation, the cylinders being an iron casting with nickel chrome iron liners and the head being of aluminum with bronze seats. It has a seven bearing crankshaft in an electron crankcase. Compression ratio is 16 to 1. The Bosch injector pump is used. Lubrication is normal high pressure from a base chamber containing 5¼ gallons.

The most important departure from standard practice is the use of external air pipes, with a bell mouth facing forward, so as to obtain a slight supercharging effect when the car is at speed. On the bench the engine reaches its peak at 2400 revolutions, but this has been increased to 2600 for speed work.

Eyston will attempt long distance records with this machine.

4900 Lb. Dowmetal Trailer Carries Three Fords

Weighing only 4900 lb., this streamlined Dowmetal trailer with 131-in. Ford V-8 tractor carries three Ford cars at speeds of 45 to 50 m.p.h. The trailer is 40 ft. long by 12 ft. high, and is supported at the rear by a four-wheel bogey. All wheels are equipped with hydraulic brakes. Fleets of these combinations will be used to deliver cars to dealers. They are being built by Fruehauf Trailer Co. and the Dow Chemical Co.



Citroen Experimenting with Front Drive as Creditors Undertake Reorganization

PARIS, March 10 (*By Mail*)—Financial reorganization of the André Citroen Automobile Company is now being undertaken as a result of the inability of the firm to meet credit notes. While no information has been given out by the firm itself, and André Citroen refuses all interviewers, creditors maintain that their bills, which have not been met for the last three months, amount to a total of 150,000,000 francs. The total indebtedness, however, is higher, for a certain number of short term bonds have become due at the present date.

The leading creditors comprise Michelin, Creusot, Solex, Bendix, the Budd Body Company, and certain American machine tool makers. A few days ago the banks refused to discount Citroen paper, and the outcome is a scheme for reorganization, with the Creusot Company and the Lazare Bank, backed by the Bank of France, strongly represented. Shares of 500 francs nominal value dropped to 140 francs.

It is understood that under this scheme André Citroen's influence will be considerably reduced, although he will remain on the board of directors. At the present time M. Citroen is being subjected to severe criticism because of his lavish expenditure. It is maintained that the entirely new factory he erected a few months ago was quite unnecessary in view of the condition of the world's markets, also that much of his advertising was unnecessarily lavish.

In connection with the new factory, the Budd Company has maintained an important staff of American engineers at the Citroen works for the past four months, their task being to supervise the erection of new presses and assist in production. All of these presses have not yet been delivered.

"We are not likely to suffer any loss," stated one of the leading creditors to *Automotive Industries* representative. "The situation is delicate, but it is not desperate. Mistakes have been made and the policy has not been sufficiently conservative, but the factory itself is a valuable asset and the French Government would interfere rather than allow the works to be closed down."

"An unfortunate phase of the situation is that in addition to the financial difficulties, the company is in a poor position technically. It had been intended to bring out a new model on March 1, but owing to manufacturing difficulties this has had to be delayed. Should it become possible to produce this model during the next few days, the financial difficulties would almost immediately solve themselves."

Although no announcement has been made to the public, M. Citroen last week presented to his leading dealers a new front wheel drive model with

It was S.A.E. 20 In a Pierce-Arrow

In the report of the Philadelphia Section paper presented by H. C. Mougey (*Automotive Industries*, March 17), reference was made to the world's record run made by Ab Jenkins last summer on the Utah salt beds. It was erroneously stated that Mr. Jenkins drove a Studebaker, whereas he actually drove a Pierce-Arrow. We regret this inexcusable error. We are also informed that the oil used was S.A.E. 20, and not 20W.

a four cylinder engine of approximately 90 cubic inches. This has independent front wheel suspension incorporating the Porsche torsion bar in place of laminated springs. At the present time it is not known when this will be produced, nor whether the other models will have front drive.

Citroen is reported to have 14,000 automobiles in stock. At the present time his sales are below those of both Renault and Peugeot. Normally Citroen is ahead of Peugeot and either equal to or ahead of Renault in passenger car production.

Peugeot is about to produce a six cylinder model, to be known as the 601, similar in general design to the two four-cylinder models at present on the market. It will have the same type of independent front wheel suspension as the "fours."

Darrin at Studebaker

SOUTH BEND, IND.—Howard Darrin, European body design expert, is in South Bend to work on improvements for the new Studebaker. Darrin, who flew to South Bend from Chicago in his own Moth plane, will remain at the Studebaker plant for more than a month.

Auto Lite Name Change Proposed

TOLEDO, March 27.—Stockholders of Electric Auto Lite Co. recessed their annual meeting to Wednesday afternoon to complete some details relating to merger with Moto Meter Gauge and Equipment Corp. as approved by stockholders of both companies.

The proposed change of name to Auto-Lite-Moto-Meter Corp. will be one of the matters to be voted upon.

The directorate will be enlarged from eight to twelve members, Moto Meter announced. Net profit after depreciation, interest, federal taxes of \$150,-

666 for 1933, compared with net loss of \$369,962 for previous year.

Auto Lite announced another 5 per cent wage increase effective March 29, keeping in step with larger manufacturers in the industry and seeking to avert any reopening of difficulties at the end of the strike truce in Toledo on April 1.

Muskegon Cuts Loss

MUSKEGON—A net loss after charges of \$55,323 for 1933 is reported by the Muskegon Motor Specialties Company, a Houdaille-Hershey subsidiary, as compared with net loss of \$167,802 in 1932.

Ingersoll S. & D. Co. Names Milne Production Manager

CHICAGO—W. Scott Milne has been appointed production manager of the Chicago plant of The Ingersoll Steel & Disc Company (division of the Borg Warner Corporation, Chicago).

Julian Deane Resigns

SPRINGFIELD, MASS.—Julian (Larry) Deane, sales promotion manager of United American Bosch corporation of this city, has resigned to become associated with McCann-Erickson, Inc., New York advertising agency.

CALENDAR OF COMING EVENTS

SHOWS

Cleveland (Automotive Service Industries)Nov. 5-9

MEETINGS

American Chemical Society, St. Petersburg, Fla.March 25-30
American Welding Society, New York CityApril 26
U. S. Chamber of Commerce, WashingtonMay 1-4
National Battery Mfrs. Assoc., Cleveland, O. (Annual)May 16-18
S.A.E. Summer Meeting, Saranac Lake, N. Y.June 17-22
American Society for Testing Materials, Atlantic City, N. J.June 25-29
American Chemical Society, Cleveland, OhioSept. 10-14
American Welding Society, New York CityOct. 1-5

ANNUAL MEETINGS

Natl. Automobile Chamber of Commerce, New York, N. Y.June 7
Natl. Safety Council, Cleveland, O., Oct. 1-5

CONVENTIONS

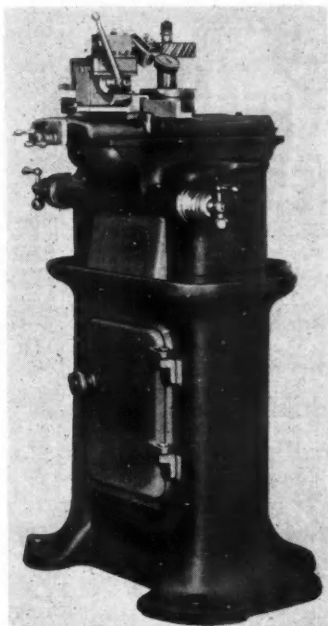
American Gear Mfg. Assoc., Wilkesburg, Pa. (Annual)May 3-4
American Society for Metals, New York CityOct. 1-5
American Society for Metals, New York CityOct. 1-5
International Foundry Congress, PhiladelphiaOct. 22-26
American Foundrymen's Assoc., PhiladelphiaOct. 22-26

EXPOSITION

Natl. Exposition of Power & Mechanical Engineering (Biennial) New York, N. Y.Dec. 3-8

Lees-Bradner Gear Tester

A new Gear Tester is announced by The Lees-Bradner Co., Cleveland, Ohio, for checking tooth contour, arc of action, length of line of action, tooth-to-tooth spacing, cumulative er-



ror and eccentricity of both spur and helical gears. Either side of the involute curve may be checked without changing arbors, levers or turning gears over—contact point is simply shifted to other side of tooth.

One attachment is supplied for testing tooth spacing and eccentricity, another for testing tooth contour. Direct reading indicators record plus or minus variations in tenths of thousandths.

For testing tooth contour the machine employs the base circle of any given gear and then reproduces the tooth curve of that gear by rolling a tangent line upon the base circle and marking the path of any point in the tangent line.

When the base circle is rotated, the straight edge is caused to roll upon the base circle and the contact lever traces the involute curve. Any movement of the contact lever away from the true involute curve is registered on indicators which read in tenths of thousandths, plus or minus.

Provision has been made for a simultaneous check of tooth-to-tooth spacing and eccentricity. The space testing device consists of a base mounted on machine and carrying a lever actuated slide movable radially of gear being tested. Movement of the lever in one direction retracts the slide and when released slide is restored to its initial position by a compression spring.

A trunnioned or swiveling member also carries the contactor for tooth spacing and indicator for space errors and is adjustable to gears of

NEW DEVELOPMENTS

Automotive Parts, Accessories and Production Tools

fifty degrees right-hand or left-hand. Here also all measurements are normal to the tooth. Tooth contactor for space errors is adjustable on small

cross slide straddling cone in order that it may be set for various pitches. Readings on indicator are direct in ten thousandths of an inch.

Heald Improves No. 81 Grinder

According to a recent announcement by The Heald Machine Co., Worcester, Mass., important changes have been made in the well-known Heald No. 81 internal grinder to improve its flexibility and ease of handling.

A separate motor drive for the workhead has been standardized, making it convenient to grind either straight or tapered work. The motor, which is mounted on the workhead, drives the spindle by means of a belt. An adjustable idler is provided to take up the slack. Any one of four dif-

ferent kinds of workhead motor may be fitted; A.C. or D.C., single or multiple speed. The maximum angle to which the workhead may be swiveled is 30 deg.

on the back of the workhead, which bears against a lever on the end of the fixture operating shaft. The workhead clutch is operated by a hydraulic cylinder controlled by the table, in place of the cam previously used. The standard water tank has had added to it a swinging drain pipe, for ease in emptying the tank when it becomes necessary to clean it out. An extra-capacity tank is available to take the place of the standard on high production jobs. It has a larger capacity than standard, to eliminate heating of the water when the machine is running on an exceptionally heavy schedule.

The drive from the motor to the



ferent kinds of workhead motor may be fitted; A.C. or D.C., single or multiple speed. The maximum angle to which the workhead may be swiveled is 30 deg.

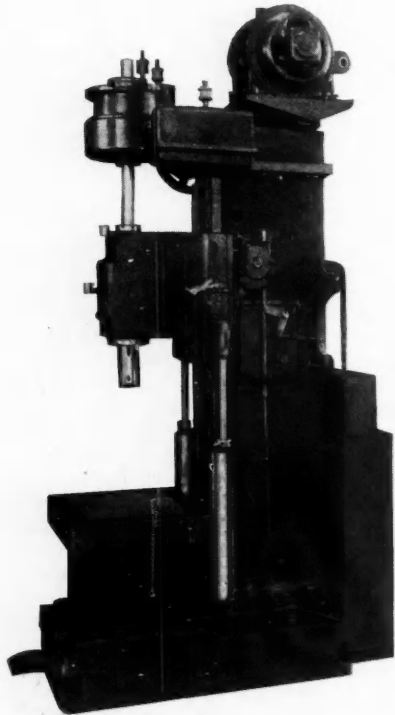
The fixture operating mechanism, though hydraulically actuated, is similar in construction to that previously furnished. As before, it is available in three types: standard pull type, push type, special type for diaphragm fixtures. All three now are actuated by a small hydraulic cylinder mounted

wheelhead idler shaft is now by means of multiple V belts. This reduces belt slip at this point, and should give greater belt life than the flat canvas belt formerly used.

The operating controls have been changed only in detail. Added are a hand knob for regulating the spring tension on the gages, and a taper adjustment for the workhead by means of opposed screws, working on the same principle as that on the No. 72A Gagematic.

★ BAKER ★

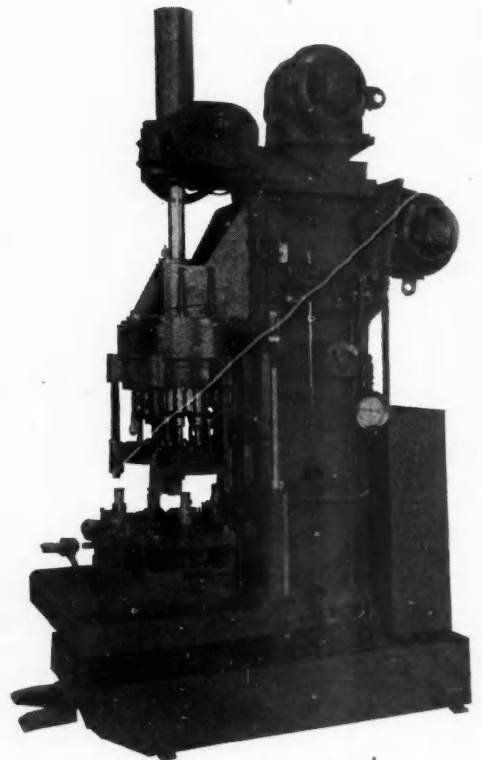
"TWIN-PULL" ★ HYDRAULIC FEED MACHINES



These machines are made in three sizes, machine illustrated being the smallest of these, and designated as our 4-VH. This has a maximum capacity of 2" high speed drill in steel, and proportionate capacity for multiple drilling or boring. This machine is designed so that it can be readily furnished with multiple heads or indexing tables for specialized work where a number of parts are to be machined at one time, or successive operations are to be performed on the same piece. Machine is semi-

automatic, having a rapid advance to the work, automatically indexing into feed, and then automatically withdrawing from feed. The main drive is by hardened alloy steel spiral gears, the spindle being multiple splined. The feed is by means of our patented * twin-pull construction, where a cylinder is mounted on each side of the saddle.

One illustration shows standard single spindle machine, the other the machine with a special multiple head, indexing table and fixtures for drilling, second boring and finish boring ten holes in a gear case.



BAKER BROTHERS, INC., TOLEDO, OHIO